

PRIMARY CRUSHER

Figure 2-5

**MODELING PROTOCOL
PHELPS DODGE SIERRITA INCORPORATED
DUAL PRIMARY CRUSHER
PM₁₀ AIR QUALITY ANALYSIS**

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1.0 MODELING APPROACH

To assess the potential PM₁₀ impacts from the dual primary crushers' scrubber stack, the U. S. Environmental Protection Agency (USEPA) air dispersion model, Industrial Source Complex, Version 3 (ISC3), version date of 00101, will be used. Since both short-term and long-term periods will be modeled, the short-term version of ISC3 (ISCST3) will be utilized. The set-up of modeling inputs and selection of program processing options will be performed in accordance with recommendations for point sources in a rural complex terrain setting in the Guidelines on Air Quality Models, Revised (USEPA, July, 1986).

1.1 AIR QUALITY MODEL

The ISC3 model is a steady-state Gaussian plume model designed to predict ground-level pollutant concentrations from a wide variety of sources associated with an industrial source complex. The major features and capabilities of the ISC3 model are:

- ▶ Regulatory default option;
- ▶ Plume rise due to momentum and buoyancy;
- ▶ Building downwash procedures;
- ▶ Stack tip downwash;
- ▶ Default options on wind speed profiles;
- ▶ Consideration of gravitational effects (settling & dry deposition) on ambient concentrations;
- ▶ Simulation of point, line, volume, area, and open pit sources;
- ▶ Calculation of dry, wet or total deposition;
- ▶ Air concentration estimates for averaging periods varying from one hour to one year;
- ▶ Variation of source emission rates for month, season, or hour of the day;
- ▶ Source groups options;
- ▶ All terrain types (simple, intermediate, and complex); and
- ▶ Several receptor grid networks and discrete receptors.

This air quality modeling analysis will not require the use of all of these model options. For example, ambient air concentration predictions will not incorporate gravitational settling effects, nor

will wet or dry deposition impacts be relevant to this air modeling analysis. Source characterization will be limited to point sources only. The default rural settings of the ISC3 model will be used where appropriate.

1.2 SOURCE REPRESENTATION

Table 1 provides a listing of the source parameters for the dual primary crusher stack to be included in the modeling analyses. The stack will be modeled as a point source, using stack parameters measured during source testing. Measured flow rate is smaller than estimated by assuming the scrubber fan is operated at maximum design rate. However, the measured rate will be used to provide a more conservative estimate of ambient air impacts since lower volumetric flow rates with a given emission rate will typically result in higher near-source ambient air impacts because of more limited plume rise. The locations of the crushers' scrubber stack and the Sierrita facility boundary are shown in Figure 1.

1.3 RECEPTOR GRID

The receptor grid will be centered on the Sierrita Mine site and will be supplemented by fence line boundary receptors, spaced at 50 meters. The total grid will encompass an approximate area that extends 10 kilometers (km) from the fence line boundary. Receptor grid spacing within approximately two km of the property boundary will be 100 meters to represent fine grid receptors in which the majority of maximum ambient air impacts from the plant are expected to occur. Receptors from approximately two to five km of the property boundary will be spaced at 250 meter intervals, while the remaining receptors from five to 10 km of the property boundary will be spaced at 500 meter intervals to represent coarse grid receptors. The property boundary will include the Sierrita Mine and Twin Buttes Mine.

An additional, fine receptor grid will be centered on the location of the maximum concentration identified by the initial receptor grid. The fine grid will be 500 meters wide with 50 meter spacing.

All receptors will be specified in UTM coordinates. Terrain elevations will be specified for all receptors and sources. An expanded coarse grid will be used beyond 10 km if significant impact concentration contours from plant emissions are not adequately defined by the initial receptor grid.

A plot of the Sierrita property boundary and the proposed receptor grid is presented in Figure 2.

1.4 METEOROLOGICAL DATA

Five years of meteorological data will be utilized for this analysis. The data will consist of surface observations from Tucson, Arizona and mixing heights from Tucson, Arizona for the years 1987 - 1991. The anemometer height for this data set will be assumed to be 10.0 meters.

The meteorological dataset chosen for this analysis consists of five years of surface observations and upper air data (i.e., mixing heights) from the nearest National Weather Service (NWS) station. The EPA's Support Center for Regulatory Air Models (SCRAM) website provides NWS meteorological data for use in regulatory models. Three NWS stations, providing surface observations, are listed for Arizona: Tucson International Airport, Phoenix/Sky Harbor International Airport, and Prescott Municipal Airport (Tucson airport is the only NWS mixing height station in Arizona). Because PDSI is located approximately 25 miles from the Tucson airport, the Tucson dataset contains the available meteorological data that is most representative of the facility location.

The proposed meteorological dataset is the same dataset that was proposed to ADEQ for PDSI's 1996 PSD permit application for an electrical cogeneration plant. Because ADEQ considered this meteorological data to be spatially and climatologically representative of the area of interest, ADEQ approved the data for use in the air quality impact analysis.

PDSI's 1996 permit application included a representativeness analysis that compared the area where the data were collected with the area in which the data was to be used. This analysis concluded that the terrain features near the Sierrita facility are compatible with the use of Tucson data, since channeling and blocking affects are similar at the two sites, and that other factors make use of the Tucson data somewhat conservative with respect to high terrain impacts. A copy of the representative analysis is attached.

1.5 BUILDING DOWNWASH

Building downwash will be included for all point sources that could be affected. Direction-specific building dimensions will be defined, based on actual building dimensions and stack locations from information provided by Phelps Dodge, using BPIP computer software. The BPIP software incorporates algorithms for building downwash analysis consistent with USEPA guidelines. Building locations, building heights, stack locations and stack heights to be input to the BPIP software are depicted in Figure 3.

1.6 AVERAGING TIMES

Modeling will be conducted for the 24-hour and annual averaging times applicable for the PM_{10} ambient air quality standards. The objective of the modeling analysis will be to demonstrate that maximum modeled 24-hour and annual averaged PM_{10} concentrations are below modeling significance levels. For both the 24-hour and annual averaging periods, the highest 24-hour average and annual average concentrations from the five modeled meteorological years will be used to demonstrate impacts below modeling significance levels.

2.0 EMISSIONS ESTIMATION

Modeled PM₁₀ emission rates for the scrubber stack will be based on recent source testing. The derivation of the PM₁₀ emission rate is presented below.

Previous source testing of the scrubber stack controlling the two crushers derived an estimated controlled particulate matter (“PM”) emission factor (“EF”) of 0.00003 pounds PM per ton of ore processed (lb/ton). Since each crusher has a maximum design capacity of 5,000 tons per hour (“tph”), the maximum combined throughput of the two crushers is 10,000 tph. Multiplying the PM EF derived from previous source testing by the maximum combined throughput of the two crushers provides the following short-term PM emission rate (“ER”) estimate:

$$ER_{PM}: \quad 0.00003 \text{ lb/ton} \times 10,000 \text{ tons/hr} = 0.300 \text{ lb/hr}$$

The assumed PM₁₀ fraction of total PM in an exhaust stream from a control device such as a scrubber is 0.50. The resultant PM₁₀ ER from application of this fraction is:

$$ER_{PM-10}: \quad 0.300 \text{ lb/hr} \times 0.50 = 0.150 \text{ lb/hr}$$

Modeled short-term PM and PM₁₀ emissions, expressed as grams per second (g/sec), will be:

$$ER_{PM}: \quad 0.300 \text{ lb/hr} \times 453.59 \text{ g/lb} / 3,600 \text{ sec/hr} = 0.0378 \text{ g/sec}$$

$$ER_{PM-10}: \quad 0.150 \text{ lb/hr} \times 453.59 \text{ g/lb} / 3,600 \text{ sec/hr} = 0.0189 \text{ g/sec}$$

For a conservative estimate of maximum potential ambient air impacts, the crushers are assumed to operate 24 hr/day, 365 days/yr to allow the use of the above estimated short-term emission rates for both the 24-hour and annual averaging periods.

APPENDIX 3: CONSENT DECREE COMPLIANCE MEASURES
FOR THE MOLYBDENUM ROASTING OPERATIONS

I. EMISSIONS LIMITS AND STANDARDS

A. PARTICULATE MATTER STANDARD

Phelps Dodge shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any molybdenum roasting equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

$$E = 3.59P^{0.62}$$

Where:

E = the maximum allowable particulate emission rate in pounds-mass per hour

P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

B. VISIBLE EMISSIONS - OPACITY STANDARD

The opacity of emissions from any molybdenum roasting equipment into the atmosphere shall not be greater than 40 percent as measured by EPA Reference Method 9. Where the presence of uncombined water is the only reason for the exceedance of this visible emissions requirement, such exceedance shall not constitute a violation.

C. REDUCED SULFUR STANDARD

Phelps Dodge shall not cause, allow, or permit to be discharged into the atmosphere from any roaster the operating temperature of which exceeds 700°F., reduced sulfur in excess of ten percent of the sulfur entering the process as feed. Reduced sulfur includes sulfur equivalent from all sulfur emissions including sulfur dioxide, sulfur trioxide, and sulfuric acid.

D. COMPLIANCE DETERMINATION

1. Each emission limit or standard in this Section I shall apply to the molybdenum roasting operations at all times and at all points of molybdenum roasting emissions discharge.

2. Compliance Determination for the Particulate Matter Standard

Compliance with the particulate matter standard in Section I.A above shall be determined by either:

a. Conducting a performance test on the molybdenum roaster(s) in accordance with the test methods and procedures of Section III below; or

b. Any credible evidence or information relevant to whether a molybdenum roaster would have been in compliance with the particulate matter standard if the performance test referred to in Section I.D.2.a above had been performed.

3. Compliance Determination for the Reduced Sulfur Standard

- a. With the exception of the molybdenum roaster operating condition referred to in Section I.D.3.b below, the reduced sulfur standard in Section I.C above applies to each individual molybdenum roaster separately (i.e., Phelps Dodge shall not discharge into the atmosphere from No. 1 Molybdenum Roaster reduced sulfur in excess of ten percent of the sulfur entering No. 1 Molybdenum Roaster as feed, and Phelps Dodge shall not discharge into the atmosphere from No. 2 Molybdenum Roaster reduced sulfur in excess of ten percent of the sulfur entering No. 2 Molybdenum Roaster as feed).
- b. If, during any period, all of the off-gas from one molybdenum roaster combine with all of the off-gas from the other molybdenum roaster before being released into the atmosphere through the main stack, then the reduced sulfur standard in Section I.C above applies to the molybdenum roasters jointly for that period only (i.e., Phelps Dodge shall not discharge into the atmosphere from Nos. 1 and 2 Molybdenum Roasters through the main stack reduced sulfur in excess of ten percent of the sulfur entering Nos. 1 and 2 Molybdenum Roasters as feed).
- c. Compliance with the reduced sulfur standard in Section I.C above shall be determined by:
 - (1) Conducting a performance test on the molybdenum roaster(s) in accordance with the test methods and procedures of Section III below; or
 - (2) Continuous emissions monitoring, as set forth in Section II below; or
 - (3) Any credible evidence or information relevant to whether a molybdenum roaster would have been in compliance with the reduced sulfur standard if the performance test in Section I.D.3.c.(1) above had been performed.

II. MOLYBDENUM ROASTING SULFUR MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

A. CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) FOR SO₂

Phelps Dodge shall install, calibrate, maintain, and operate a continuous emissions monitoring system to continuously measure SO₂ emissions from the molybdenum roasters in accordance with the following:

1. Compliance Determination for the Reduced Sulfur Standard

In addition to Section I.D.3.c.(1) and (3) above, compliance with the reduced sulfur standard in Section I.C above shall be determined for each hour of roaster operations (i.e., each hour in which roasting off-gas is routed to the main stack from any roaster), in accordance with the following equation:

$$\text{SO}_2 \text{ percent removed} = 100 \times \left(1 - \left(\frac{\text{SO}_2 \text{ Mass Emissions Determination}}{\text{SO}_2 \text{ Generation Determination}} \right) \right)$$

$$\text{where: SO}_2 \text{ Mass Emissions Determination} = \frac{\sum_{i=\text{hr}1}^{\text{hr}=3} (\text{SO}_2)_i}{3}$$

where: $(\text{SO}_2)_i$ = SO_2 mass emissions for hour i as described in Section II.A.1.b below and at least three hours have elapsed since startup of roaster operations (for the purpose of this and the following equation only, "startup of roaster operations" occurs immediately upon resumption of feed after there has been at least eleven consecutive hours when no feed has entered the roaster).

$$\text{SO}_2 \text{ Generation Determination} = \frac{\sum_{j=\text{hr}1}^{\text{hr}=x} (\text{SO}_2)_j}{x}$$

where: x = hours of operation since startup of roaster operations and $x \leq 12$ hours.

$$(\text{SO}_2)_j = S_{\text{input}} \times 2000 \text{ lbs per ton} \times 2 \text{ lbs SO}_2 \text{ per lb S}$$

$$\text{where: } S_{\text{input}} = F_{\text{tph}} \times (1 - F_{\text{H}_2\text{O}}) \times S_{\text{percent}}$$

F_{tph} = concentrate feed to roaster in tons per hour

$F_{\text{H}_2\text{O}}$ = percent moisture in concentrate feed to roaster

S_{percent} = percent sulfur in concentrate feed to roaster

An SO_2 percent removed value from the above equation that is less than 90 percent shall constitute a violation of the reduced sulfur standard in Section I.C above and shall be reported as excess emissions as part of the CEMS Excess Emissions and Monitoring System Performance Report referred to in Section II.C below. Phelps Dodge shall use all valid measurements or data points collected to calculate both the SO_2 Generation Determinations and the SO_2 Mass Emissions Determinations.

a. SO_2 Generation Determination

(1) 24-Hour Composite Sampling Percent Sulfur in Feed Determination

- (a) Each day the roaster is operating, beginning at approximately 6:00 A.M. and ending between 4:00 A.M. and 6:00 A.M. the following day (the "24-Hour Composite Sampling Period"), Phelps Dodge shall collect one roaster feed sample during each consecutive two-hour period (for a total of

12 samples collected for each 24-Hour Composite Sampling Period) from the discharge of the load cell feed bin that is currently feeding the roaster. If there is no roaster feed at 6:00 A.M., sample collection shall begin no later than two hours after feed begins and continue during each two-hour period remaining in the 24-Hour Composite Sampling Period. Although Phelps Dodge is required to collect one valid roaster feed sample for each two-hour period, Phelps Dodge's failure to do so shall not invalidate any valid samples collected for that same 24-hour period. All collected individual samples, whether one or more, shall be used as the 24-hour composite sample. Until Phelps Dodge determines the percent sulfur and percent moisture content in the feed in accordance with the procedures set forth below, or when no valid samples or data exist for a 24-Hour Composite Sampling Period, Phelps Dodge shall substitute, as applicable, 24.6 percent sulfur in feed and 10 percent moisture content in feed for that 24-Hour Composite Sampling Period for the sole purpose of calculating the SO₂ Generation Determination, and, if applicable, complying with the reporting requirements of Attachment A, Section XII of the Existing Title V Permit and Section II.C below.

- (b) Phelps Dodge shall store the samples in a single sealed compositing container.
 - (c) Following collection of the last sample of the 24-Hour Composite Sampling Period, Phelps Dodge shall transport the sealed compositing container to a laboratory, where the laboratory shall prepare and analyze the 24-hour composite sample, recording the analysis as percent sulfur in feed on a dry weight basis for the 24-Hour Composite Sampling Period.
 - (d) Phelps Dodge shall determine the percent sulfur in feed for each 24-Hour Composite Sampling Period within 72 hours of receipt by the on-site Phelps Dodge laboratory. If an off-site laboratory is used, the determination shall be made within 10 days of receipt of the sample by the off-site laboratory.
 - (e) During multiple roaster operations, Phelps Dodge shall duplicate the above procedures (i.e., the 24-hour composite sampling percent sulfur in feed on a dry weight basis shall be determined individually for each roaster).
- (2) 24-Hour Composite Sampling Percent Moisture Content in Feed Determination
- (a) Using a portion of the sample collected for the

24-hour composite sampling percent sulfur in feed determination in step (1) above, Phelps Dodge shall determine the moisture content in the feed for the 24-Hour Composite Sampling Period by laboratory analysis. Such analysis shall be recorded as the percent moisture content in feed for that 24-Hour Composite Sampling Period.

- (b) Phelps Dodge shall determine the percent moisture content in feed for each 24-Hour Composite Sampling Period within 72 hours of receipt by the on-site Phelps Dodge laboratory. If an off-site laboratory is used, the determination shall be made within 10 days of receipt of the sample by the off-site laboratory.

(3) Hourly Feed Determination

- (a) Phelps Dodge shall weigh all feed entering each roaster using load cell feed bins as described in the procedures in Section II.A.2 below.
- (b) During each clock hour, Phelps Dodge shall total and record the feed entering each roaster during the past hour. When no valid data exist for an hourly feed period, Phelps Dodge shall substitute feed data from the average of the most recent valid hourly feed periods previous to and subsequent to the missing data period for the sole purpose of calculating the SO_2 Generation Determination, and, if applicable, reporting excess emissions pursuant to Attachment A, Section XII of the Existing Title V Permit and Section II.C below. This procedure to substitute feed data shall not be used for periods of missing hourly feed values longer than three hours. When no valid data exist for an hourly feed period, but there exists credible evidence that there was no feed, the hourly feed value is deemed to be zero (0) tons per hour.
- (c) Upon receipt of the percent moisture content in feed determination in step (2) above, Phelps Dodge shall correct each hourly wet feed value to a dry feed value using the corresponding 24-hour composite sampling percent moisture content in feed determination.

(4) Hourly SO_2 Generation Determination

Upon receipt of the 24-hour composite sampling percent sulfur in feed determination in step (1) above and the hourly dry feed determination in step (3) above, Phelps Dodge shall input these determinations and the eleven immediately preceding hourly SO_2 Generation Determinations into the equation in Section II.A.1. above to determine compliance with the reduced sulfur

standard in Section I.C above.

b. SO₂ Mass Emissions Determination

- (1) Phelps Dodge shall measure the concentration of SO₂, volumetric flow rate, and stack temperature in off-gas from the roaster operations by a CEMS on the main stack.
- (2) Phelps Dodge shall use data acquired by the CEMS to calculate hourly SO₂ mass emissions. The CEMS shall be operated in accordance with Section II.A.3 below. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. All data points required to be collected during an hour shall be, to the extent practicable, evenly spaced over the hour. Phelps Dodge shall calculate hourly SO₂ mass emissions measurements, expressed as pounds SO₂ per hour, by totaling each 15-minute period of CEMS mass emissions data for each hour. When no valid data exist for a 15-minute period, Phelps Dodge shall substitute data from the average of the most recent valid 15-minute periods previous to and subsequent to the missing data period for the sole purpose of calculating the SO₂ Mass Emissions Determination, and, if applicable, reporting excess emissions pursuant to Attachment A, Section XII of the Existing Title V Permit and Section II.C below.
- (3) Phelps Dodge shall input the current and two immediately preceding hourly SO₂ mass emissions measurements from step (2) above into the equation in Section II.A.1. above to determine compliance with the reduced sulfur standard in Section I.C above.

2. Feed Weight

Phelps Dodge shall perform daily inspections of all load cells associated with the four molybdenum roaster feed weigh bins to ensure that the load cells are operating normally. To ensure feed weigh bin accuracy, Phelps Dodge shall calibrate the load cell system at least once per calendar year using load cell manufacturer's calibration guidelines. If, during annual calibration, a load cell is found not to meet calibration criteria, Phelps Dodge shall undertake corrective action as soon as practicable and verify that the corrective action is successful and that the load weigh bin cells are performing within manufacturer's calibration guidelines. Verification of calibrations and corrective actions shall be performed and documented by a third-party technician, registered with the Arizona Department of Weights and Measures. Documentation shall contain reference to the specific NIST standard used for calibration. Phelps Dodge shall ensure that the feed weigh bin load cells, as well as the associated automated data acquisition and handling systems, are operating and monitoring at all times, except during periods of calibration, quality assurance, preventive maintenance, or repair of these systems. Phelps Dodge shall not disrupt the feed weigh bin load cells or any portion

thereof, and thereby avoid performing the monitoring and recording required by this Section II. When the feed weigh bin load cell system is unable to obtain valid measurements of feed to the molybdenum roaster(s), then Phelps Dodge shall obtain a valid measurement of feed data by manually calibrating the feed screw speed.

3. CEMS Installation, Calibration, Maintenance, and Operation Requirements and Quality Assurance and Quality Control Procedures

Phelps Dodge shall install, calibrate, maintain, and operate, as well as conduct quality assurance and quality control procedures for, a CEMS on the main stack in accordance with the requirements of Section V below. Phelps Dodge shall ensure that the CEMS, as well as the associated automated data acquisition and handling systems, are operating and monitoring at all times, except during periods of system breakdown, calibration, zero and span adjustments, quality assurance, preventive maintenance, or repair of these systems, or after seven consecutive days have elapsed since any feed has entered either roaster. Phelps Dodge shall not disrupt the CEMS or any portion thereof, and thereby avoid performing the monitoring and recording required by this Section II. For each missing CEMS data period, Phelps Dodge shall continuously record the pH of the scrubber slurry underflow during the entire period to ensure proper operation of the scrubber.

B. RECORDKEEPING

Phelps Dodge shall record and maintain all of the following information:

1. A log of roaster operations and the operation of each component of roaster off-gas system, including the hours of the day that the roasters and their associated air pollution control equipment were in operation; the occurrence and duration of any startup, shutdown, or malfunction in roaster operations; and the occurrence and duration of any malfunction of the roaster operations air pollution control equipment.
2. The pH of each scrubber underflow.
3. The date, time, and duration of when feed to a roaster is discontinued and when feed is resumed.
4. All records related to the SO₂ Generation Determinations, including the following:
 - a. All sampling and analysis records for each 24-Hour Composite Sampling Period, which shall include all the information required by the Existing Title V Permit, Attachment A, Section XIII.A.1-6.
 - b. All data/inputs and results/outputs of the equation in Section II.A.1 above, including feed sulfur content, feed moisture content, corrections of wet feed value to dry feed value, feed rate, and all information necessary for conversion of data to pounds SO₂ generated per hour, as required by Section II.A above.
 - c. All records related to the roaster feed weigh bin load

cells, including daily inspection logs, data and results of all calibrations, and any corrective action taken.

- d. For each period when no valid samples or data exist for a 24-Hour Composite Sampling Period or when the feed weigh bin load cell system is unable to obtain valid measurements of feed to the molybdenum roaster(s) (regardless of whether valid measurements of feed data has been obtained by manually calibrating the feed screw speed), the date, time, and duration of any such periods; the reasons why no valid samples, data, or measurements are available for such periods; any corrective action taken; and whether the missing data procedures of Section II.A.1.a.(1).(a), II.A.1.a.(3).(b), or II.A.2 were implemented.
5. All records related to the SO₂ Mass Emissions Determinations or the operations of the CEMS, including the following:
 - a. The date, time, and duration of any periods during which the CEMS is inoperative, and all records of the pH of the scrubber slurry underflow during such periods.
 - b. All measurements from the CEMS, including concentration of SO₂, volumetric flow rate, and stack temperature.
 - c. All valid CEMS data, reasons and time periods for invalid CEMS data, and whether the missing data procedure of Section II.A.1.b.(2) above was used.
 - d. Data and results for CEMS tests, audits, and calibrations, and copies of CEMS testing protocol and performance testing reports.
 - e. Records of CEMS repairs, adjustments, or maintenance, and any corrective action taken with regard to the CEMS.
 - f. All information necessary for conversion of data to pounds of SO₂ mass emissions per hour, as required by Section II.A above.
 6. All records related to the comparison of the SO₂ Generation Determinations with the corresponding SO₂ Mass Emissions Determinations referred to in Section II.A.1 above; and copies of each CEMS Excess Emissions and Monitoring System Performance Report and of each Summary Report required by Section II.C below.

C. SEMIANNUAL REPORTING

1. Phelps Dodge shall submit a CEMS Excess Emissions and Monitoring System Performance Report to the Director and the Administrator semiannually. These excess emissions reports shall be submitted coincident with the semiannual compliance certifications required by the Existing Title V Permit, Attachment A, Section VII (the first excess emissions report shall cover the period from the date that the compliance certification referred to in Paragraph 13 of the Consent Decree is due through the end of the applicable reporting period referred to in the Existing Title V Permit, Attachment A, Section VII.A).

2. The CEMS Excess Emissions and Monitoring System Performance Report shall include all of the following:
 - a. The magnitude of excess emissions computed in accordance with Section II.A.1, the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.
 - b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the roaster operations, including the nature and cause of any malfunction (if known), the corrective action taken, or the preventative measures adopted.
 - c. The date and time identifying each period during which the CEMS, including the CEMS data acquisition and handling system, was inoperative, except for zero and span checks; the nature of any CEMS repairs or adjustments; and the pH of the scrubber slurry underflow during such periods.
3. If (i) the total duration of excess emissions for the reporting period is less than one percent of the total operating time for the reporting period, (ii) the total SO₂ Generation Determination downtime for the reporting period is less than five percent of the total operating time for the reporting period, and (iii) the total CEMS downtime for the reporting period is less than five percent of the total operating time for the reporting period, then only a summary report shall be submitted, unless either EPA or ADEQ requests an excess emissions report. If (i) the total duration of excess emissions for the reporting period is one percent or greater of the total operating time for the reporting period, (ii) the total SO₂ Generation Determination downtime for the reporting period is five percent or greater of the total operating time for the reporting period, or (iii) the total CEMS downtime for the reporting period is five percent or greater of the total operating time for the reporting period, then the summary report and the excess emissions report described above shall both be submitted. For the purpose of this Section II.C.3 only, "SO₂ Generation Determination downtime" means each two-hour period when there was a failure to collect or retain a valid feed sample; each 24-hour period when the composite sample was invalid or lost, or when there was a failure to determine the percent sulfur in feed or moisture content in feed; and each one-hour period when there was a failure to collect or retain valid feed weigh bin data, correct the wet feed value to a dry feed value, or determine the SO₂ generated. The summary report shall include all of the following:
 - a. The date and time identifying each period during which (i) less than 12 samples were used for a 24-hour composite sample and the reason(s) for failure to obtain all 12 samples; (ii) the roaster feed weigh bin load cell system was inoperative and the nature of system repairs or adjustments; and (iii) the missing data procedures of Section II.A.1.a.(1).(a), II.A.1.a.(3).(b), II.A.1.b.(2), or II.A.2 above were used and the reason(s) for such use.
 - b. When no excess emissions have occurred; when the CEMS or the feed weigh bin load cells, as well as the associated data acquisition and handling systems, have not been inoperative,

repaired, or adjusted; or when the missing data procedures of Section II.A.1.a.(1).(a), II.A.1.a.(3).(b), II.A.1.b.(2), or II.A.2 have not been used, such information shall be stated in the report.

- c. All information needed to complete the following summary report form:

SUMMARY REPORT OF EXCESS EMISSION AND MONITORING SYSTEM PERFORMANCE
FOR PHELPS DODGE SIERRITA, INC.

Pollutant: SO₂

Reporting Period Dates: From _____ to _____

Company: Phelps Dodge Sierrita, Inc.

Emission Limitation: No discharge into the atmosphere from any roaster (the operating temperature of which exceeds 700 degrees F.) reduced sulfur in excess of ten percent of the sulfur entering the process as feed

Address: 6200 West Duval Mine Road, Green Valley, AZ 85622

Monitor Manufacturer and Model No.: _____

Date of Latest CEMS Certification or Audit: _____

Process Unit Description: _____

Total Source Operating Time in Reporting Period (in hours): _____

Emission Data Summary

1. Duration of excess emissions in reporting period due to:
 - a. Startup/shutdown: _____
 - b. Control equipment problems: _____
 - c. Process problems: _____
 - d. Other known causes: _____
 - e. Unknown causes: _____
2. Total duration of excess emissions: _____
3. Total duration of excess emissions x (100) [total source operating time]:
_____ %

SO₂ Generation Determination Performance Summary

1. SO₂ Generation Determination downtime in reporting period due to:
 - a. Failure to collect/retain valid two-hour feed sample: _____
 - b. Failure to collect/retain valid 24-hour composite sample: _____
 - c. Failure to determine 24-hour percent sulfur in feed: _____
 - d. Failure to determine 24-hour moisture content in feed: _____
 - e. Failure to collect/retain valid one-hour feed weigh bin data: _____
 - f. Failure to correct one-hour wet feed value to dry feed value: _____
 - g. Failure to determine one-hour SO₂ generated: _____
2. Total Generation Determination downtime (periods in which more than one of the above circumstances apply are to be counted only once): _____
3. Total Generation Determination downtime x (100) [total source operating time]: _____ %

CEMS Performance Summary

1. CEMS downtime in reporting period due to:
 - a. Monitor equipment malfunctions: _____
 - b. Non-monitor equipment malfunctions: _____
 - c. Quality assurance calibrations: _____
 - d. Other known causes: _____
 - e. Unknown causes: _____
2. Total CEMS downtime: _____
3. Total CEMS downtime x (100) [total source operating time]: _____ %

On a separate page, describe any changes since last report in CEMS, process, or controls.

I certify that the information contained in this report is true, accurate, and complete

Name: _____
Signature: _____
Title: _____
Date: _____

III. PERFORMANCE TESTING REQUIREMENTS

A. MOLYBDENUM ROASTER

1. Phelps Dodge shall conduct annual performance test(s) for particulate matter from the molybdenum roaster(s). These performance tests shall be conducted in accordance with Reference Method 5 or 17 in 40 C.F.R. Part 60, Appendix A.
2. Phelps Dodge shall conduct annual performance test(s) for sulfur emissions from the molybdenum roaster(s). A sample of the inlet molybdenum sulfide feed shall be obtained during the performance test. The sample of the inlet molybdenum sulfide feed shall be analyzed for sulfur content. The roaster performance tests shall be conducted in accordance with Reference Method 6 in 40 C.F.R. Part 60, Appendix A. Alternatively, the satisfactory completion of annual RATA testing, as specified in Section V.C.1 below may be used to satisfy this requirement. The pH of the scrubber slurry underflow shall be recorded during the performance test and reported as part of the test results.

B. TEST METHODS AND PROCEDURES

1. The reference methods in 40 C.F.R. Part 60, Appendix A shall be used to determine compliance with the standards prescribed in Sections I.A and I.C as follows:
 - a. Method 5 for the concentration of particulate matter and the associated moisture content;
 - b. Method 1 for sample and velocity traverses;
 - c. Method 2 for velocity and volumetric flow rate;
 - d. Method 3 or 3A for gas analysis and calculation of excess air, using the integrated sample technique;
 - e. Method 6 or 6C for concentration of SO₂.
2. For Method 5, Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Administrator and Director. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 160°C.

(320°F).

3. For Method 6, the sampling site shall be the same as that selected for Method 5.
4. For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.
5. Operational Conditions During Performance Testing. Performance tests shall be conducted under such conditions as the Administrator and the Director shall specify to the Phelps Dodge based on representative performance of the facility. Phelps Dodge shall make available to the Administrator and the Director such records as may be necessary to determine the conditions of the performance tests. Operations during start-up, shutdown, and malfunction (as defined in A.A.C. R18-2-101) shall not constitute representative operational conditions.
6. Performance Test Plan. At least 14 calendar days prior to performing a test, Phelps Dodge shall submit a test plan to the Administrator and the Director.
7. Stack Sampling Facilities. Phelps Dodge shall provide or cause to be provided, performance testing facilities as follows: (i) sampling ports adequate for test methods applicable to the facility; (ii) safe sampling platforms; (iii) safe access to sampling platforms; and (iv) utilities for sampling and testing equipment.
8. Interpretation of Final Results. Each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified above. For the purpose of determining compliance with the above standards, the arithmetic means of results of the three runs shall apply.
9. Report of Final Test Results. A written report of the results of all performance tests shall be submitted to the Administrator and the Director within 30 days after the test is performed.

IV. AIR POLLUTION CONTROL REQUIREMENTS

- A. At all times, including periods of startup, shutdown, and malfunction, Phelps Dodge shall maintain and operate the molybdenum roaster operations and the associated wet scrubbers, cyclones, mist eliminators and electrostatic precipitators in a manner consistent with good air pollution control practices for minimizing particulate matter emissions and, where applicable, reduced sulfur emissions.
- B. At all times, including periods of startup, shutdown, and malfunction, Phelps Dodge shall, to the extent practicable, maintain and operate all other molybdenum roaster operations pollution control devices including baghouses, spray bars, duct work and hoods in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.
- C. Roof mode operation is prohibited. Roof mode means to vent roaster off-

gas directly to the atmosphere through stacks in the roof of each roaster.

- D. Bypassing molybdenum roasting pollution control devices (i.e., diverting molybdenum roaster off-gas such that the off-gas fails to pass through a cyclone, an electrostatic precipitator, a wet scrubber, and a mist eliminator) on a roaster is prohibited until that roaster has ceased operating (for the purpose of this Section IV.D only, a roaster has "ceased operating" when at least 24 consecutive hours have elapsed since any feed has entered that roaster). Phelps Dodge shall not use the molybdenum roaster maintenance stack to vent roaster off-gas to the atmosphere. Any ducting to the molybdenum roaster maintenance stack shall be disconnected, thereby eliminating the possibility of routing roaster off-gas to the atmosphere through the maintenance stack.

V. **CEMS INSTALLATION, CALIBRATION, MAINTENANCE, AND OPERATION REQUIREMENTS AND QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES**

A. CEMS DESCRIPTION

1. The CEMS shall monitor SO₂, volumetric flow rate, and stack temperature from the outlet of the main stack.
2. The output from the SO₂ analyzer, flow monitor, and the temperature sensor will be transmitted directly to a data acquisition system. The system will calculate the mass output of SO₂ from the main stack. The system will be capable of reading all values over the full range of each measurement device. In addition, the data acquisition system will create a record of all required data for storage, review, and reporting. Data from these monitors shall be used to calculate and record pounds of SO₂ emitted for each 15 minute period.
3. The system will be equipped to provide daily zero and span checks of both the SO₂ monitor and the flow measurement device.
4. SO₂ emissions will be monitored using a continuous SO₂ analyzer. The sample will be drawn from the manifold through the analyzer by a sample pump.
5. The velocity will be measured in actual feet per second. Volumetric flow will be converted to dry standard cubic feet per minute using the stack diameter, the gas temperature, and any necessary pressure adjustments. Preliminary moisture measurements will be conducted to determine a moisture correction factor B_{ws}. The flow monitoring system may also require developing a polynomial adjustment coefficient (K factor) so that the flow monitor measurements agree with the reference method. The flow monitor will be designed and equipped to allow for a daily calibration error test consisting of at least two reference values: 0% to 20% of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and 50% to 70% of span. Flow monitor response, both before and after any adjustment, will be capable of being recorded by the data acquisition and handling system. The flow monitor will be designed to allow a daily calibration error test of the entire flow monitoring system, from the outlet of the probe tip through and including the data acquisition and handling system, or the flow monitoring system from and including the transducer through and including the data

acquisition and handling system.

6. Temperature will be measured using a thermocouple mounted in a thermowell installed near the location of the flow monitor. Temperature data will be reduced to 1-minute averages, clock basis.

B. ROUTINE OPERATION AND CALIBRATION

1. CEMS Daily Checks

Phelps Dodge shall inspect the CEMS each day for the correct flow settings for the sample collection system and the dry air supply. Phelps Dodge shall inspect the sample collection system for proper operation, check calibration gas supply, review daily zero span results, and complete the CEMS log.

2. SO₂ Analyzer Daily Checks

Phelps Dodge shall inspect the CEMS each day to assess CEMS operation. The assessment shall include checking the daily zero and span of the monitor, reviewing fault alarms, and performing routine maintenance. The CEMS is capable of automatic zero and spans of the SO₂ monitoring system. The low-level calibration standard should be between 0% and 20% of analyzer full scale, and the high-level calibration standard should be between 50% and 70% of analyzer full scale. The absolute difference of the monitor response to the calibration gases must not be greater than 2.5% of the span value of the instrument. If this limit is not met, Phelps Dodge shall perform a manual calibration of the system to verify the results of the automatic calibration. Phelps Dodge shall verify that there is sufficient gas flow, that there are no leaks in the system, and that the correct cylinder concentration was used. If the system checks all show that the analyzer span or zero has drifted, Phelps Dodge shall adjust the analyzer. Phelps Dodge shall record all repairs and adjustments in the CEMS log.

3. Flow Daily Checks

Phelps Dodge shall log automatic daily checks of the flow monitor zero and span. Phelps Dodge shall perform daily automatic blow back and pluggage checks of the CEMS.

C. QUALITY ASSURANCE AND QUALITY CONTROL

1. CEMS Relative Accuracy Test Audit ("RATA")

- a. At least once per calendar year, but not less than six months after the initial RA test or the previous RATA, Phelps Dodge shall conduct a CEMS RATA. The Administrator and the Director will be notified in writing at least 21 days prior to the initiation of testing.
- b. EPA RM test procedures that will be implemented to accomplish the RATA are as follows:

RM 2 "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type-S Pitot Tube)";

RM 4 "Determination of Moisture Content in Stack Gases";
and

RM 6 or 6C "Determination of Sulfur Dioxide Emissions from Stationary Sources" or "Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)", except that under either RM 6 or 6C each test run shall be 15 minutes and coincide with the CEMS 15-minute data points.

- c. A minimum of nine acceptable RM tests will be conducted to demonstrate the accuracy of the CEMS at the stack test location. The RA of the SO₂ monitoring system must be no greater than 20% of the mean value of the RM test data or 10% of the applicable standard, whichever is greater, in terms of pounds of SO₂ emitted for each 15 minute period.

2. Initial Performance Test

Phelps Dodge shall conduct an initial CEMS performance test. The test will consist of two parts: (i) a 168-hour calibration drift ("CD") test, and (ii) a relative accuracy ("RA") test.

- a. A 7-day CD test shall be performed in conjunction with the initial performance test. During the 7-day CD test period the analyzers will operate under normal operating conditions, performing daily zero and span checks, and the roasters will operate under normal operating conditions (i.e., normal feed rates). The daily CD checks will be observed and recorded by the data acquisition system and in a logbook. The data will be documented in the CEMS performance test report. The SO₂ analyzer calibration must not deviate from the reference value of the calibration gas by more than 2.5% of the established span value.
- b. The CD test will be considered invalid if one of the daily checks during the 7-day CD test falls outside the limits. Phelps Dodge shall check all components of the CEMS for leaks or possible failure, and make any necessary adjustments. The 7-day CD test will be repeated upon completion of all necessary adjustments or repairs.
- c. EPA Reference Method ("RM") test procedures that will be implemented to accomplish the RA test are as follows:

RM 2 "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type-S Pitot Tube)";

RM 4 "Determination of Moisture Content in Stack Gases";
and

RM 6 or 6C "Determination of Sulfur Dioxide Emissions from Stationary Sources" or "Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)", except that under either RM 6 or 6C each test run shall be 15 minutes and coincide with the CEMS 15-minute data points.

- d. A minimum of nine acceptable RM tests will be conducted to demonstrate the accuracy of the CEMS at the stack test location. The RA of the SO₂ monitor system must not be greater than 20% of the mean value of the RM test data or 10% of the applicable standard, whichever is greater, in terms of pounds of SO₂ emitted for each 15 minute period.
 - e. The procedures and protocols used for the initial performance test will be established by Phelps Dodge in the form of a Certification Test Plan Protocol letter that will be submitted to the Administrator and the Director for approval prior to initiation of the certification process. The Administrator and the Director will be notified in writing at least 30 days prior to the testing and will be provided the opportunity to participate in the testing.
3. SO₂ Monitor Periodic Calibration
- a. Daily Calibration. Phelps Dodge shall check the SO₂ monitor calibration drift ("CD") as follows:
 - (1) Calibration of SO₂ monitors shall be conducted daily for the determination of instrument zero and span CD on all instrument ranges.
 - (2) For instruments utilizing calibration gas, the calibration gas must be introduced as close to the sampling point as possible.
 - (3) The CEMS must be adjusted whenever the zero or span CD exceeds the performance standards.
 - (4) The zero drift check must be conducted at a measurement level at or between 0% and 20% of the instrument range. The value selected must be lower than the lowest value that would be expected under normal source operating conditions.
 - (5) The span drift check must be conducted at a measurement level at or between 50% and 70% of the instrument range unless an alternative concentration can demonstrate better representation of normal source operating levels.
 - (6) If either the zero (or low-level) or high-level CD result exceeds 5.0% of the span value for five, consecutive, daily periods, the CEMS is out-of-control. If either the zero (or low-level) or high-level CD result exceeds 10% of the span value during any CD check, the CEMS is out-of-control. The beginning of the out-of-control period is the time corresponding to the completion of the fifth, consecutive, daily CD check with a CD in excess of two times the allowable limit, or the time corresponding to the completion of the daily CD check that results in a CD in excess of four times the allowable limit. The end of the out-of-control period is the time corresponding to the completion of the CD check following corrective action that results in the CD's at both the zero and high-

level measurement points being within the corresponding allowable CD limit.

- b. Quarterly Auditing. Phelps Dodge shall comply with the following procedures for quarterly calibration error checks of the SO₂ monitors:
- (1) A Cylinder Gas Audit ("CGA") or Relative Accuracy Audit ("RAA") will be performed once per calendar quarter except the calendar quarter in which an annual RATA is conducted. A CGA or RAA will be conducted in three consecutive calendar quarters. The fourth calendar quarter audit will consist of a RATA;
 - (2) A CGA may be conducted in three of four calendar quarters, but no more than three quarters in succession.
 - (3) A CGA will be conducted by challenging the CEMS with an audit gas of known concentration at two points within the following ranges:
 - (a) The CGA high-level measurement values must be between 50% and 60% of the instrument span;
 - (b) The CGA low-level measurement range must be between 20% and 30% of the instrument range.
 - (4) If the RA determined by the CGA exceeds + 15% of the average audit value or + 5 ppm, whichever is greater, the CEMS is out-of-control.
 - (5) The RAA will be conducted in the same manner as the RATA, described above, except that only three sets of RM test runs will be performed.
 - (6) If the RA determined by the RAA exceeds $\pm 15\%$ of the three-run average or $\pm 7.5\%$ of the applicable standard, whichever is greater, the CEMS is out-of-control.
 - (7) The beginning of the out-of-control period is the time corresponding to the completion of the sampling for the CGA or RAA. The end of the out-of-control period is the time corresponding to the completion of the sampling for the subsequent successful audit.
4. Data Acquisition
- a. Data Validation Criteria
- Phelps Dodge shall retain all measurements related to the CEMS for five years. However, emission data obtained during periods when the CEMS is out-of-control will not be used in the calculation of reported emissions for that period nor be used to determine the total data availability of the reporting period.
- b. Phelps Dodge shall conduct a RATA each calendar year. Data

for the following calendar year will be considered invalid until a successful RATA is initiated.

5. Preventive Maintenance

- a. To ensure the collection of quality data and reduce instrument downtime, Phelps Dodge shall take corrective action in the following circumstances:
 - (1) Instrument "out-of-control" as determined by the daily zero and span CD checks; and
 - (2) Instrument malfunction as determined during review of daily zero and span CD check information.
- b. If an instrument problem is detected as described above, Phelps Dodge shall initiate corrective action immediately. If plant personnel observe an analyzer malfunction, a work order will be initiated. Phelps Dodge shall be responsible for correcting the malfunctioning instrument. In the event that the repair cannot be accomplished by Phelps Dodge's personnel, the manufacturer or other qualified firm will be contracted as required to provide on-site or remote remedial repair services, whichever is deemed necessary.
- c. When the corrective action has been completed, and the analyzer is deemed to be operating properly, appropriate test procedures that document the system's proper operation will be implemented and fully documented. This will be accomplished by repeating the procedure or CD check that was conducted when the malfunction or "out-of-control" condition was initially detected. If the post-maintenance zero or CD checks demonstrate drift in excess of twice the applicable performance specifications, the instrument will be re-calibrated in accordance with the quarterly calibration error check procedures detailed above. Calibrations may be conducted in-situ.

6. Gas Cylinder Certification

The calibration gas standards used for daily calibrations, CGAs, RAAs, and RATAs will be prepared and traceable to EPA Protocol specifications. The calibration gas standards used for all audits (CGA, RAA, and RATA) will not be used for daily zero and span CD checks.

APPENDIX 4

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division
3033 N. Central Ave. • Phoenix, AZ 85012-2809-33 • Phone: (602) 207-2338

AIR QUALITY CONTROL PERMIT

(As required by Title 49, Chapter 3, Article 2, Section 49-426, Arizona Revised Statutes)

COPY

This air quality control permit does not relieve applicant of responsibility for meeting all air pollution regulations

1. PERMIT TO BE ISSUED TO (Business license name of organization that is to receive permit) _____

Phelps Dodge Sierrita Incorporated

2. NAME (OR NAMES) OF OWNER OR PRINCIPALS DOING BUSINESS AS THE ABOVE ORGANIZATION _____

Phelps Dodge Sierrita Incorporated

3. MAILING ADDRESS **P.O. Box 527**

NUMBER	STREET	
<u>Green Valley,</u>	<u>AZ</u>	<u>85622-0527</u>
CITY OR COMMUNITY	STATE	ZIP CODE

4. ORIGINAL EQUIPMENT LOCATION/ADDRESS **6200 West Duval Mine Road**

NUMBER	STREET		
<u>Green Valley,</u>	<u>AZ,</u>	<u>Pima</u>	<u>85622</u>
CITY OR COMMUNITY	STATE	COUNTY	ZIP CODE

5. FACILITIES OR EQUIPMENT DESCRIPTION **Copper and Molybdenum Mining and Processing**

6. THIS PERMIT ISSUED SUBJECT TO THE FOLLOWING **Conditions contained in Attachments "A", "B", and "C"**

7. ADEQ PERMIT NUMBER **# M190699P2-99** PERMIT CLASS **I** EXPIRATION DATE **June 24, 2007**

PERMIT ISSUED THIS **24th** DAY OF **June**, 2002

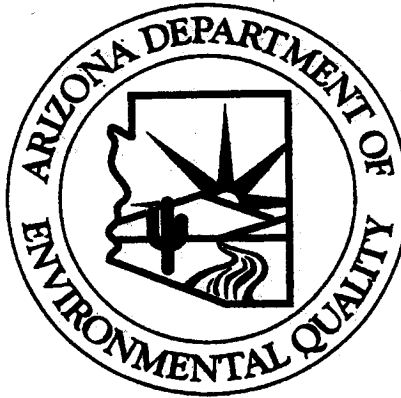
SIGNATURE

TITLE

Nancy C. Wrona, Director, Air Quality Division

Governor Jane Dee Hull
State of Arizona

Jacqueline E. Schafer, Director
Arizona Department of Environmental Quality



COPY

3033 N. Central Ave.
Phoenix, AZ 85012
(602) 207-2338 Voice
(602) 207-2366 Fax

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY CLASS I PERMIT

COMPANY NAME: Phelps Dodge Sierrita Incorporated
PERMIT NUMBER: M190699P2-99
DATE ISSUED: June 24, 2002
EXPIRY DATE: June 24, 2007

This operating permit is issued to Phelps Dodge Sierrita Incorporated (PDSI), Permittee, for operation of their Sierrita and Twin Buttes Operations, which is located on U.S. Highway 19 in Green Valley, Pima County, Arizona. PDSI operates an open pit copper mine, ore processing and copper extraction facilities. Copper and molybdenum are the primary products produced by PDSI. Copper and molybdenum disulfide are produced through conventional milling and froth flotation and pure copper is produced through solution extraction and electrowinning. Molybdenum trioxide is produced through roasting. Rhenium is also recovered in the molybdenum roasting operations.

All definitions, terms, and conditions used in this permit conform to those in the Arizona Administrative Code R18-2-101 et. seq. (A.A.C.) and 40 Code of Federal Regulations (CFR), except as otherwise defined in this permit. Unless noted otherwise, references cited in the permit conditions refer to the A.A.C. All material permit conditions have been identified within the permit by a double underline. All terms and conditions in this permit are enforceable by the Administrator of the U.S. Environmental Protection Agency, except for those terms and conditions that have been designated as "State Enforceable Only".

PDSI is a "major source". The potential emission rates of the following pollutants are greater than 100 tons per year: (i) particulate matter; (ii) particulate matter less than 10 microns; (iii) nitrogen oxides; and (iv) carbon monoxide. This permit is issued in accordance with Title V of the Clean Air Act, and Title 49, Chapter 3 of the Arizona Revised Statutes.

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ATTACHMENT "A": GENERAL PROVISIONS

AIR QUALITY CONTROL PERMIT NO. M190699P2-99 FOR PHELPS DODGE SIERRITA INCORPORATED

I. PERMIT EXPIRATION AND RENEWAL [A.R.S. § 49-426.F, A.A.C. R18-2-304.C.2, 306.A.1, and 322]

- A. This permit is valid for a period of five years from the date of issuance of the permit.
- B. Permittee shall submit an application for renewal of this permit at least 6 months, but not more than 18 months prior to the date of permit expiration.

II. COMPLIANCE WITH PERMIT CONDITIONS [A.A.C. R18-2-306.A.8.a. and b, A.R.S. § 49-463, and A.R.S. §49-464]

- A. Permittee shall comply with all the conditions contained in Attachments "A" through "C" of this permit including all applicable requirements of Arizona air quality statutes and the air quality rules. Any permit noncompliance constitutes a violation of the Arizona Revised Statutes and is grounds for enforcement action; for permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. In addition, noncompliance with any federally enforceable requirement constitutes a violation of the Clean Air Act (Act).
- B. Need to halt or reduce activity not a defense. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

III. PERMIT REVISION, REOPENING, REVOCATION AND REISSUANCE, OR TERMINATION FOR CAUSE [A.A.C. R18-2-306.A.8.c and 321.A]

- A. The permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by Permittee for a permit revision, revocation and reissuance, or termination; or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- B. The permit shall be reopened and revised under any of the following circumstances:
 - 1. Additional applicable requirements under the Act become applicable to the Class I source. Such reopening shall only occur if there are three or more years remaining in the permit term. The reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to R18-2-322(B). Any permit revision required pursuant to this subparagraph shall comply with provisions in R18-2-322 for permit renewal and shall reset the five year permit term.
 - 2. Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the Class I permit.

3. The Director or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
 4. The Director or the Administrator determines that the permit needs to be revised or revoked to assure compliance with the applicable requirements.
- C. Proceedings to reopen and issue a permit, including appeal of any final action relating to a permit reopening, shall follow the same procedures as apply to initial permit issuance and shall, except for reopenings under paragraph 1 above, affect only those parts of the permit for which cause to reopen exists. Such reopenings shall be made as expeditiously as practicable. Permit reopenings for reasons other than those stated in paragraph III.B.1 of this Attachment shall not result in a resetting of the five year permit term.

IV. POSTING OF PERMIT

[A.A.C. R18-2-315]

- A. Permittee shall post this permit, or a certificate of permit issuance where the facility is located in such a manner as to be clearly visible and accessible. All equipment covered by the permit shall be clearly identified with one of the following:
1. Current permit number.
 2. Serial number or other equipment number that is also listed in the permit to identify that piece of equipment.
- B. A copy of the complete permit shall be kept on the site.

V. FEE PAYMENT

[A.A.C. R18-2-326 and 306.A.9]

Permittee shall pay fees to the Director pursuant to A.R.S. § 49-426(E) and A.A.C. R18-2-326.

VI. ANNUAL EMISSIONS INVENTORY QUESTIONNAIRE

[A.A.C. R18-2-327]

- A. Permittee shall complete and submit to the Director an annual emissions inventory questionnaire. The questionnaire is due by March 31 or ninety days after the Director makes the inventory form available each year, whichever occurs later, and shall include emission information for the previous calendar year.
- B. The questionnaire shall be on a form provided by the Director and shall include the information required by A.A.C. R18-2-327.

VII. COMPLIANCE CERTIFICATION

- A. Permittee shall submit a compliance certification to the Director twice each year, which describes the compliance status of the source with respect to each permit condition. The first certification shall be submitted no later than April 15th, and shall report the compliance status of the source during the period between September 16th of the previous year, and March 15th of the current year. The second certification shall be submitted no later than October 15th, and shall report the compliance status of the source during the period between March 16th and September 15th of the current year.

The compliance certifications shall include the following:

1. Identification of each term or condition of the permit that is the basis of the certification; [A.A.C. R18-2-309.2.c.i]
2. Compliance status with each applicable requirement; [A.A.C. R18-2-309.2.c.ii]
3. Whether compliance was based on continuous or intermittent data; [A.A.C. R18-2-309.2.c.iii]
4. Method(s) used for determining the compliance status of the source, currently and over the reporting period; [A.A.C. R18-2-309.2.c.iv]
5. A progress report on all outstanding compliance schedules submitted pursuant to Section XII.D of this Attachment. Progress reports submitted with compliance certifications satisfy the reporting requirements of A.A.C. R18-2-309.5.d. [A.A.C. R18-2-309.5.d]

- B. A copy of all compliance certification for Class I permits shall also be submitted to the EPA Administrator. [A.A.C. R18-2-309.2.d]

VIII. CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS [A.A.C. R18-2-309.3]

Any document required to be submitted by this permit, including reports, shall contain a certification by a responsible official of truth, accuracy, and completeness. This certification and any other certification required under this part shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

IX. INSPECTION AND ENTRY [A.A.C. R18-2-309.4]

Permittee shall allow the Director or the authorized representative of the Director upon presentation of proper credentials to:

- A. Enter upon Permittee's premises where a source is located or emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;
- B. Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;
- C. Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;
- D. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and
- E. Record any inspection by use of written, electronic, magnetic and photographic media.

X. PERMIT REVISION PURSUANT TO FEDERAL HAZARDOUS AIR POLLUTANT STANDARD

If this source becomes subject to a standard promulgated by the Administrator pursuant to section 112(d) of the Act, then Permittee shall, within twelve months of the date on which the standard is promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard.

[A.A.C. R18-2-304.C]

XI. ACCIDENTAL RELEASE PROGRAM

If this source becomes subject to the provisions of 40 CFR Part 68, then Permittee shall comply with these provisions according to the timeline specified in 40 CFR Part 68.

[40 CFR 68]

XII. REPORTING OF EXCESS EMISSIONS, PERMIT DEVIATIONS, AND EMERGENCIES

A. EXCESS EMISSIONS REPORTING

[A.A.C. R18-2-310.01.A and -310.01.B]

1. Excess emissions shall be reported as follows:

a. Permittee shall report to the Director any emissions in excess of the limits established by this permit. Such report shall be in two parts as specified below:

- (1) Notification by telephone or facsimile within 24 hours of the time when Permittee first learned of the occurrence of excess emissions including all available information from paragraph b. of this subsection.**
- (2) Detailed written notification within 72 hours of the notification under subparagraph (1) of this paragraph.**

b. The excess emission report shall contain the following information:

- (1) Identity of each stack or other emission point where the excess emissions occurred.**
- (2) Magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions.**
- (3) The time and duration or expected duration of the excess emissions.**
- (4) Identity of the equipment from which the excess emissions emanated.**
- (5) Nature and cause of such emissions.**
- (6) The steps taken, if the excess emissions were the result of a malfunction, to remedy the malfunction and the steps taken or planned to prevent the recurrence of the malfunctions.**
- (7) The steps that were or are being taken to limit the excess emissions.**
- (8) If the permit contains procedures governing source operation during periods of startup or malfunction and the excess emissions resulted from startup or malfunction, a list of the steps taken to comply with the permit procedures.**

2. In the case of continuous or recurring excess emissions, the notification requirements of this section shall be satisfied if the source provides the required notification after excess emissions are first detected and includes in such notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period or changes in the nature of the emissions as originally reported shall require additional notification pursuant to subsection XII.A.1. [A.A.C. R18-2-310.01.C]

B. PERMIT DEVIATIONS REPORTING

[A.A.C. R18-2-306.A.5]

1. Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. Prompt reporting shall mean that the report was submitted to the Director by certified mail, facsimile, or hand delivery within two working days of the time the deviation occurred.
2. All instances of deviations from permit requirements shall be clearly identified in the required semiannual monitoring report specified in Attachment "B", Section I.B, and shall be certified by the responsible official. [A.A.C. R18-2-306.A.5.a]

C. EMERGENCY PROVISION

[A.A.C. R18-2-306.E]

1. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.
 - a. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of paragraph (b) of this subsection are met.
 - b. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An emergency occurred and that Permittee can identify the cause(s) of the emergency;
 - (2) The permitted facility was at the time being properly operated;
 - (3) During the period of the emergency, Permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and
 - (4) Permittee submitted notice of the emergency to the Director by certified mail, facsimile, or hand delivery within two working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and

corrective action taken.

- c. In any enforcement proceeding, Permittee seeking to establish the occurrence of an emergency has the burden of proof.
 - d. This provision is in addition to any emergency or upset provision contained in any applicable requirement.
- D. For any excess emission or permit deviation that cannot be corrected within 72 hours, Permittee is required to submit a compliance schedule to the Director within 21 days of such occurrence. The compliance schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with the permit terms or conditions that have been violated. [A.R.S. 49-426.I.5]
- E. AFFIRMATIVE DEFENSES FOR EXCESS EMISSIONS DUE TO MALFUNCTIONS, STARTUP, AND SHUTDOWN [A.A.C. R18-2-310]

1. Applicability

This rule establishes affirmative defenses for certain emissions in excess of an emission standard or limitation and applies to all emission standards or limitations except for standards or limitations :

- a. Promulgated pursuant to Sections 111 or 112 of the Act;
- b. Promulgated pursuant to Titles IV and VI of the Clean Air Act;
- c. Contained in any Prevention of Significant Deterioration (PSD) or New Source Review (NSR) permit issued by the U.S. EPA;
- d. Contained in A.A.C. R18-2-715.F; or
- e. Included in a permit to meet the requirements of A.A.C. R18-2-406.A.5.

2. Affirmative Defense for Malfunctions

Emissions in excess of an applicable emissions limitation due to malfunction shall constitute a violation. When emissions in excess of an applicable emission limitation are due to a malfunction, Permittee has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if Permittee has complied with the reporting requirements of A.A.C. R18-2-310.01 and has demonstrated all of the following :

- a. The excess emissions resulted from a sudden and unavoidable breakdown of process equipment or air pollution control equipment beyond the reasonable control of Permittee;
- b. The air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good air pollution control practice for minimizing emissions;
- c. If repairs were required, the repairs were made in an expeditious fashion when the applicable emission limitations were being exceeded. Off-shift labor and overtime were

utilized where practicable to ensure that the repairs were made as expeditiously as possible. If off-shift labor and overtime were not utilized, Permittee satisfactorily demonstrated that the measures were impracticable;

- d. The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;
- e. All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;
- f. The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance;
- g. During the period of excess emissions there were no exceedances of the relevant ambient air quality standards established in Title 18, Chapter 2, Article 2 of the Arizona Administrative Code that could be attributed to the emitting source;
- h. The excess emissions did not stem from any activity or event that could have been foreseen and avoided, or planned, and could not have been avoided by better operations and maintenance practices;
- i. All emissions monitoring systems were kept in operation if at all practicable; and
- j. Permittee's actions in response to the excess emissions were documented by contemporaneous records.

3. Affirmative Defense for Startup and Shutdown

- a. Except as provided in Condition XII.E.3.b below, and unless otherwise provided for in the applicable requirement, emissions in excess of an applicable emission limitation due to startup and shutdown shall constitute a violation. When emissions in excess of an applicable emission limitation are due to startup and shutdown, Permittee has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if Permittee has complied with the reporting requirements of A.A.C. R18-2-310.01 and has demonstrated all of the following :
 - (1) The excess emissions could not have been prevented through careful and prudent planning and design;
 - (2) If the excess emissions were the result of a bypass control equipment, the bypass was unavoidable to prevent loss of life, personal injury, or severe damage to air pollution control equipment, production equipment or other property;
 - (3) The air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good air pollution control practice for minimizing emissions;
 - (4) The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of

such emissions;

- (5) All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;
- (6) During the period of excess emissions there were no exceedances of the relevant ambient air quality standards established in Title 18, Chapter 2, Article 2 of the Arizona Administrative Code that could be attributed to the emitting source;
- (7) All emissions monitoring systems were kept in operation if at all practicable; and
- (8) Permittee's actions in response to the excess emissions were documented by contemporaneous records.

- b. If excess emissions occur due to a malfunction during routine startup and shutdown, then those instances will be treated as other malfunctions subject to Condition XII.E.2 above.

4. **Affirmative Defense for Malfunctions During Scheduled Maintenance**

If excess emissions occur due to a malfunction during scheduled maintenance, then those instances will be treated as other malfunctions subject to Condition XII.E.2 above.

5. **Demonstration of Reasonable and Practicable Measures**

For an affirmative defense under Conditions XII.E.2 or XII.E.3 above, Permittee shall demonstrate, through submission of the data and information required by Condition XII.E and A.A.C. R18-2-310.01, that all reasonable and practicable measures within Permittee's control were implemented to prevent the occurrence of the excess emissions.

XIII. RECORD KEEPING REQUIREMENTS

[A.A.C. R18-2-306.A.4]

- A. Permittee shall keep records of all required monitoring information including, but not limited to, the following:

1. The date, place as defined in the permit, and time of sampling or measurements;
2. The date(s) analyses were performed;
3. The name of the company or entity that performed the analyses;
4. A description of the analytical techniques or methods used;
5. The results of such analyses; and
6. The operating conditions as existing at the time of sampling or measurement.

- B. Permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart

recordings or other data recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

XIV. REPORTING REQUIREMENTS

[A.A.C. R18-2-306.A.5.a]

Permittee shall submit the following reports :

- A. Compliance certifications in accordance with Section VII of Attachment "A".
- B. Reports of excess emissions, permit deviations, and emergencies in accordance with Section XII of Attachment "A".
- C. Other reports required by Attachment "B".

XV. DUTY TO PROVIDE INFORMATION

[A.A.C. R18-2-304.G and 306.A.8.e]

- A. Permittee shall furnish to the Director, within a reasonable time, any information that the Director may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, Permittee shall also furnish to the Director copies of records required to be kept by the permit. For information claimed to be confidential, Permittee shall furnish an additional copy of such records directly to the Administrator along with a claim of confidentiality.
- B. If Permittee has failed to submit any relevant facts or if Permittee has submitted incorrect information in the permit application, Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information.

XVI. PERMIT AMENDMENT OR REVISION

[A.A.C. R18-2-318, 319 and 320]

Permittee shall apply for a permit amendment or revision for changes to the facility which do not qualify for a facility change without revision under Section XVII, as follows:

- A. Administrative Permit Amendment (A.A.C. R18-2-318);
- B. Minor Permit Revision (A.A.C. R18-2-319);
- C. Significant Permit Revision (A.A.C. R18-2-320).

The applicability and requirements for such action are defined in the above referenced regulations.

XVII. FACILITY CHANGE WITHOUT PERMIT REVISION

[A.A.C. R18-2-317]

- A. Permittee may make changes at the permitted source without a permit revision if all of the following apply:
 - 1. The changes are not modifications under any provision of Title I of the Act or under A.R.S. § 49-401.01(17).
 - 2. The changes do not exceed the emissions allowable under the permit whether expressed therein as a rate of emissions or in terms of total emissions.
 - 3. The changes do not violate any applicable requirements or trigger any additional applicable requirements.

4. The changes satisfy all requirements for a minor permit revision under R18-2-319(A).
 5. The changes do not contravene federally enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements.
- B. The substitution of an item of process or pollution control equipment for an identical or substantially similar item of process or pollution control equipment shall qualify as a change that does not require a permit revision, if it meets all of the requirements of subsections (A) and (C) of this Section.
- C. For each such change under subsections A and B of this Section, a written notice by certified mail or hand delivery shall be received by the Director and, for Class I permits, the Administrator, a minimum of 7 working days in advance of the change. Notifications of changes associated with emergency conditions, such as malfunctions necessitating the replacement of equipment, may be provided less than 7 working days in advance of the change but must be provided as far in advance of the change as possible or, if advance notification is not practicable, as soon after the change as possible. Each notification shall include:
1. When the proposed change will occur.
 2. A description of each such change.
 3. Any change in emissions of regulated air pollutants.
 4. The pollutants emitted subject to the emissions trade, if any.
 5. The provisions in the implementation plan that provide for the emissions trade with which the source will comply and any other information as may be required by the provisions in the implementation plan authorizing the trade.
 6. If the emissions trading provisions of the implementation plan are invoked, then the permit requirements with which the source will comply.
 7. Any permit term or condition that is no longer applicable as a result of the change.

XVIII. PERFORMANCE TESTING REQUIREMENTS

[A.A.C. R18-2-312]

A. Operational Conditions During Performance Testing

Performance tests shall be conducted under such conditions as the Director shall specify to the plant operator based on representative performance of the source or facility. The owner or operator shall make available to the Director such records as may be necessary to determine the conditions of the performance tests. Operations during start-up, shutdown, and malfunction (as defined in A.A.C. R18-2-101) shall not constitute representative operational conditions unless otherwise specified in the applicable standard.

B. Performance tests shall be conducted and data reduced in accordance with the test method and procedures contained in the Arizona Testing Manual for Air Pollutant Emissions, Revision F, March 1992, unless modified by the Director pursuant to A.A.C. R18-2-312.B.

C. Performance Test Plan

At least 14 calendar days prior to performing a test, Permittee shall submit a test plan to the Director, in accordance with the Arizona Testing Manual for Air Pollutant Emissions, Revision F, March 1992.

D. Stack Sampling Facilities

Permittee shall provide or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for test methods applicable to the facility;
2. Safe sampling platforms;
3. Safe access to sampling platforms; and
4. Utilities for sampling and testing equipment.

E. Interpretation of Final Results

Each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. If a sample is accidentally lost or conditions occur in which one of the three runs is required to be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions or other conditions beyond Permittee's control, compliance may, upon the Director's approval, be determined using the arithmetic mean of the other two runs. If the Director, or Director's designee, is present, tests may only be stopped with the Director's or such designee's approval. If the Director or the Director's designee is not present, tests may only be stopped for good cause. Good cause includes, forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions or other conditions beyond Permittee's control. Termination of any test without good cause after the first run is commenced shall constitute a failure of the test.

F. Report of Final Test Results

A written report of the results of all performance tests shall be submitted to the Director within 30 days after the test is performed. The report shall be submitted in accordance with the Arizona Testing Manual and A.A.C. R18-2-312.A.

XIX. PROPERTY RIGHTS

[A.A.C. R18-2-306.A]

This permit does not convey any property rights of any sort, or any exclusive privilege.

XX. SEVERABILITY CLAUSE

[A.A.C. R18-2-306.A.7]

The provisions of this permit are severable. In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force.

ATTACHMENT "B": SPECIFIC CONDITIONS

AIR QUALITY CONTROL PERMIT NO. M190699P2-99 FOR PHELPS DODGE SIERRITA INCORPORATED

I. FACILITY-WIDE REQUIREMENTS

- A. Within 180 days of issuance of this permit, Permittee shall have on call a person that is certified in EPA Reference Method 9. [A.A.C. R18-2-306.A.3.c]
- B. At the time the compliance certifications required by Section VII of Attachment "A" are submitted, Permittee shall submit all monitoring reports required by this Attachment performed in the same six month period as applies to the compliance certification period. [A.A.C. R18-2-306.A.5.a]
- C. Visibility Limiting Standard [Pima County Code 17.16.050.D]
1. Permittee shall not cause, suffer, allow, or permit diffusion of visible emissions, including fugitive dust, beyond the property boundary line within which the emissions become airborne, without taking reasonably necessary and feasible precautions to control generation of airbourne particulate matter. Sources may be required to cease temporarily the activity or operation which is causing or contributing to the emissions until reasonably necessary and feasible precautions are taken.
 2. The actions constituting reasonably necessary and feasible precautions are included in this permit as permit conditions. Compliance with such permit conditions shall be considered compliance with condition I.C.1 above. [State Enforceable Requirement]
 3. Condition I.C shall not apply when wind speeds exceed twenty-five (25) miles per hour (using the Beaufort Scale of Wind-Speed Equivalents, or as recorded by the National Weather Service). This exception does not apply if control measures have not been taken or were not commensurate with the size or scope of the emission source.
 4. Condition I.C shall not apply to the generation of airborne particulate matter from undisturbed land. [State Enforceable Requirement]
- D. The Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A for all the affected facilities subject to the requirements of Sections II.B and III.B of this Attachment. [40 CFR 60, Subpart A]
- E. For the equipment subject to Sections II.B and III.B:
- For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any standard in this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed. [40 CFR 60.11(g)]
- F. For the equipment subject to Sections II.A, III.A, IV.A, V, VI, VII, VIII, IX, X and XI:

1. Except as provided in I.F.2, compliance with the emission limits established in this permit shall be determined by the performance tests specified in A.A.C. Article 7 or in the permit.
2. In addition to performance tests, compliance with specific emission limits may be determined by:
 - a. Opacity tests;
 - b. Emission limit compliance tests specifically designated as such in the regulation establishing the emission limit to be complied with;
 - c. Continuous emission monitoring, where applicable quality assurance procedures are followed and where it is designated in the permit or in an applicable requirement to show compliance.
3. Nothing in this permit shall be so construed as to prevent the utilization of measurements from emissions monitoring devices or techniques not designated as performance tests as evidence of compliance with applicable good maintenance and operating requirements.

[A.A.C. R18-2-312.H and I]

- G. The following equipment has been shutdown permanently. The Permittee shall obtain the appropriate permit revision before any of the equipment listed below is operated.

EQUIPMENT	SOURCE ID
Sierrita (1976) Primary Crushers SHUTDOWN	001
Esperanza Primary Crusher SHUTDOWN	034
Esperanza Sec & Tert Crushers SHUTDOWN	039-040
Esperanza Fine Ore Bin Discharge SHUTDOWN	035-036

[A.A.C. R18-2-306.01]

H. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with Pima County Code 17.16.050(D).

[A.A.C. R18-2-325]

II. REQUIREMENTS FOR THE PRIMARY CRUSHING CIRCUITS

A. Non-New Source Performance Standard (Non-NSPS) Affected Facilities

Affected Facilities subject to the Standards of Performance for Existing Nonferrous Metals Industry Sources include all equipment marked with an "N" in the "NSPS" column of Sections II and III of Attachment C of this permit. All such equipment shall comply with the following:

1. Emission Limits and Standards

a. Particulate Matter Standard

- (1) Standard Applicable Until A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County.

[State SIP R9-3-521.A.2.b]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

$$E = 17.31P^{0.16}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour
P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

- (2) Standard Applicable On and After the Date A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County.

[A.A.C. R18-2-721.B]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

$$E = 55.0P^{0.11} - 40$$

Where E and P are defined as indicated in paragraph (1) above.

b. Visible Emissions - Opacity Standard

[A.A.C. R18-2-702.B and R18-2-702.C]

- (1) The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 40 percent as measured by EPA Reference Method 9.
- (2) Where the presence of uncombined water is the only reason for the exceedance of this visible emissions requirement, such exceedance shall not constitute a violation.

2. Monitoring, Recordkeeping, and Reporting Requirements

a. Initial Requirement

Within 180 days of issuance of this permit or within 180 days of startup, Permittee shall conduct certified Method 9 observations on the scrubbers while they are operating at normal representative working conditions to establish a baseline opacity level. Within 10 days of establishing the baseline opacity, Permittee shall report the results to the Director. [A.A.C. R18-2-306.A.3.c]

b. **Daily Monitoring Requirement**

Permittee shall record the daily process rates and hours of operation of all material handling facilities. For the purpose of this permit condition material handling facilities shall mean those pieces of equipment marked with a "Y" in the "Material Handling Facility" column of Attachment C of this permit. [A.A.C. R18-2-721.F]

c. **Bi-weekly (Every Two Weeks) Monitoring Requirement** [A.A.C. R18-2-306.A.3.c]

(1) A certified Method 9 observer shall conduct a bi-weekly visual survey of visible emissions from the metallic mineral mining units covered by condition II.A when they are in operation.

(2) **For Point Sources Covered by condition II.A**

(a) If the observer, during the visual survey, does not see a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location of the observation and results of the observation.

(b) If the observer sees a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.

(c) If the six-minute opacity of the plume is less than the baseline, the observer shall make a record of the following:

- i) Location (stack identification), date, and time of the test; and
- ii) The results of the Method 9 observation.

(d) If the six-minute opacity of the plume exceeds the baseline level but is less than the opacity standard, then Permittee shall adjust or repair the controls or equipment, as necessary, to reduce opacity to or below the baseline level. Permittee shall make a record of the following:

- i) Location (stack identification), date, and time of the test; and
- ii) The results of the Method 9 observation.

(e) If the six-minute opacity of the plume exceeds both the baseline level and the opacity standard, then Permittee shall do the following:

- i) Adjust or repair the controls or equipment to reduce opacity to or

- below the baseline level; and
 - ii) Report it as an excess emission for opacity.
- (f) If corrective actions fail to reduce opacity to or below the baseline level, Permittee shall adopt the following course of action :
- i) Document all corrective action; and
 - ii) Initiate procedures to re-establish the baseline within forty eight hours in accordance with subsection (h) below.
- (g) Permittee shall conduct at least one Method 9 opacity test annually for each stack subject to the requirements of this section, if operated during the calendar year.
- (h) If necessitated by the results of the bi-weekly monitoring, Permittee may re-establish the baseline opacity level. Re-establishment of the baseline shall be performed utilizing the same procedures used in setting up the initial baseline level. Within 10 days of re-establishing the baseline opacity, Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline.

(3) For Fugitive Sources Covered by this Section

- (a) If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
- (b) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
- (c) If the six-minute opacity of the plume is less than the opacity standard, then the observer shall make a record of the following:
 - i) Location, date, and time of the test; and
 - ii) The results of the Method 9 observation.
- (d) If the six-minute opacity of the plume exceeds the opacity standard, then Permittee shall do the following:
 - i) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and
 - ii) Report it as excess emissions.

[A.A.C. R18-2-306.A.3.c]

B. New Source Performance Standards (NSPS) Affected Facilities

Affected Facilities subject to 40 C.F.R. Part 60, Subpart LL ("Standards of Performance for Metallic Mineral Processing Plants") include all equipment marked with a "Y" in the "NSPS" column of Section II of Attachment C of this permit. All such equipment shall comply with the following:

1. Emission Limits and Standards

a. Particulate Matter Standard

Permittee shall not cause to be discharged into the atmosphere from an affected facility any stack emissions that contain particulate matter in excess of 0.05 grams per dry standard cubic meter. [40 CFR 60.382(a)(1)]

b. Visible Emissions - Opacity Standard

(1) The Permittee shall not cause to be discharged into the atmosphere from an affected facility any stack emissions that exhibit greater than 7 percent opacity, unless the stack emissions are discharged using a wet scrubber emission control device;

(2) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, the Permittee shall not cause to be discharged into the atmosphere from an affected facility any process fugitive emissions that exhibit greater than 10 percent opacity.

[40 CFR 60.382(a)(2), 40 CFR 60.382(b), and A.A.C. R18-2-331]

2. Monitoring, Record Keeping and Reporting

a. Monitoring of Operations

(1) For each scrubber, Permittee shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ± 250 pascals (± 1 inch water) gauge pressure and must be calibrated on an annual basis in accordance with the manufacturer's instructions. [40 CFR 60.384(a)]

(2) For each scrubber, Permittee shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the scrubbing liquid flow rate to the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ± 5 percent of the design scrubbing liquid flow rate and must be calibrated on an annual basis in accordance with the manufacturer's specifications.

[40 CFR 60.384(b)]

b. Weekly Recording Requirement

Permittee shall record on a weekly basis the measurements of both the change in the pressure of the gas stream across the scrubber and the scrubbing liquid flow rate. [40 CFR 60.385(b)]

c. Bi-weekly (Every Two Weeks) Monitoring for Fugitive Sources Covered by condition II.B

[A.A.C. R18-2-306.A.3.e]

- (1) A certified Method 9 observer shall conduct a bi-weekly visual survey of visible emissions from the metallic mineral mining units covered by condition

II.B when they are in operation.

- (2) If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location and the results of the observation.
- (3) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall if practicable take a six-minute Method 9 observation of the plume.
- (4) If the six-minute opacity of the plume is less than the opacity standard, then the observer shall make a record of the following:
 - (a) Location, date, and time of the test; and
 - (b) The results of the Method 9 observation.
- (5) If the six-minute opacity of the plume exceeds the opacity standard, Permittee shall do the following:
 - (a) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and
 - (b) Report it as excess emissions.

d. Semi-annual Reporting Requirement

- (1) Permittee shall submit semi-annual reports to the Director of occurrences when the measurements of the scrubber pressure loss (or gain) or liquid flow rate differ by more than ± 30 percent from the average obtained during the most recent performance test. These reports shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

[40 CFR 60.385(c) and (d)]

- (2) To comply with condition II.B.2.d.(1) above, the Permittee shall use the monitoring devices in Section II.B.2.a to determine the pressure loss of the gas stream through the scrubber and scrubbing liquid flow rate at any time during each particulate matter run, and the average of the three

determinations shall be computed.

[40 CFR 60.386(c)]

C. Performance Testing Requirements

1. Permittee shall conduct particulate matter performance tests on the metallic mineral mining units subject to the requirements of this section in accordance with the following schedule:

Source ID 113 : Once within the first 365 day period following permit issuance

Source ID 101 : Once within 180 days of startup

These performance tests shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A. [A.A.C. R18-2-306.A.3.c and R18-2-312]

2. The following shall be applicable for Source ID 113:

- a. The sample volume for each run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250 °F)) in order to prevent water condensation on the filter.

[40 CFR § 60.386(b)(1)]

- b. During the initial performance test of a wet scrubber the Permittee shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

[40 CFR § 60.385(b)]

3. The following shall be applicable for non-NSPS equipment:

[A.A.C. R18-2-721.H]

- a. The reference methods in 40 CFR 60, Appendix A shall be used to determine compliance with the standards prescribed in conditions II.A.1.a as follows:

- (1) Method 5 for the concentration of particulate matter and the associated moisture content;
- (2) Method 1 for sample and velocity traverses;
- (3) Method 2 for velocity and volumetric flow rate;
- (4) Method 3 for gas analysis and calculation of excess air, using the integrated sample technique.

- b. For Method 5, Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at

least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Director. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 160° C. (320°F).

4. The Permittee shall conduct an annual Method 9 performance test to measure the opacity of process fugitive emissions from affected facilities subject to Section II.B.1.b.(2).
[A.A.C. R18-2-306.A.3.c]

D. Air Pollution Control Requirements

1. For each non-NSPS primary crusher:

At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the primary crushing circuits and the associated wet scrubbers in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.

[A.A.C. R18-2-306.A.2 & R18-2-331]

2. For each NSPS primary crusher:

At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate each NSPS- subject primary crusher and the associated wet scrubbers in a manner consistent with good air pollution control practice for minimizing particulate matter emissions.

[40 CFR 60.11(d) & R18-2-331]

3. Permittee shall maintain and operate all other pollution control devices including spray bars, duct work and hoods used to capture particulate matter emissions, to meet the emission standards in condition II.A.1.

[A.A.C. R18-2-306.A.2 and 331]

4. Twin Buttes Overland Ore Conveying (Source ID# 103)

- a. All transfer points shall be enclosed;
- b. Water sprays, with a minimum of two heads, shall be installed at every feed, transfer, and discharge point. The moisture content of the processed ore shall be no less than 4 (four) weight percent;
- c. The amount of ore transported shall not exceed 1150 tons per hour without prior approval from the Director.

[Permit No. 1214, Attachment "A", Conditions 2, 3 and 4]

E. Permit Shield

1. Except as provided in Section II.E.2 below, compliance with conditions of Section II shall be deemed compliance with Arizona SIP Rule R9-3-521(A)(2)(b), A.A.C. R18-2-721(B) and (F), A.A.C. R18-2-702(B) and (c), 40 CFR 60.382(a)(1), (a)(2), and (b), 40 CFR 60.384(a) and (b), 40 CFR 60.385(b) through (d), 40 CFR 60.386(c), 40 CFR 60.11(d), and Permit No. 1214, Attachment "A", Conditions 2, 3 and 4, for the equipment subject to

2. With regard to Source ID 113 (6A & 6B Primary Crushers), there are unresolved applicability issues, which are the subject of Findings and Notices of Violation, Docket Nos. R9-98-1, R9-00-25, and R9-01-17. The permit at this time neither addresses nor shields the Permittee from enforcement actions related to the applicability of State SIP R9-3-301, R9-3-304, R9-3-305, and R9-3-306 to Source ID 113.

III. REQUIREMENTS FOR THE SECONDARY AND TERTIARY CRUSHING CIRCUITS

The applicability of NSPS to equipment marked with an "ND" in the NSPS column of Section IV of Attachment C is unresolved. Subject to Section III.E below, the Director has determined that the provisions of Section III are "State Enforceable Requirements" for the equipment marked with an "ND" in the "NSPS" column of Section IV of Attachment C.

A. Equipment Marked "N" or "ND" in the NSPS Column of Attachment C

1. Emission Limits and Standards

a. Particulate Matter Standard for Equipment Marked with "N" in the NSPS Column of Attachment C

- (1) Standard Applicable Until A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County

[State SIP R9-3-521.A.2.b]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

$$E = 17.31P^{0.16}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour
 P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

- (2) Standard Applicable On and After the Date A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County

[A.A.C. R18-2-721.B]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

$$E = 55.0P^{0.11} - 40$$

Where E and P are defined as indicated in paragraph (1) above.

- b. State Enforceable Particulate Matter Standard for Equipment Marked with "ND" in the NSPS Column of Attachment C [A.A.C. R18-2-721.B]
[State Enforceable Only]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:

$$E = 4.10P^{0.67}$$

For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:

$$E = 55.0P^{0.11} - 40$$

Where E and P are defined as indicated in paragraph III.A.1.a above.

- c. Visible Emissions - Opacity Standard [A.A.C. R18-2-702.B, and -702.C]]

This standard is federally enforceable for equipment marked with "N" and state enforceable only for equipment marked "ND" in the NSPS column in Attachment C.

- (1) The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 40 percent as measured by EPA Reference Method 9.
- (2) Where the presence of uncombined water is the only reason for the exceedance of this visible emissions requirement, such exceedance shall not constitute a violation.

2. Monitoring, Recordkeeping, and Reporting Requirements

These requirements are federally enforceable for equipment marked with "N" and state enforceable only for equipment marked "ND" in the NSPS column in Attachment C.

- a. Initial Requirement

Within 180 days of issuance of this permit or within 180 days of startup, Permittee shall conduct certified Method 9 observations on the scrubbers while they are operating at normal representative working conditions to establish a baseline opacity level. Within 10 days of establishing the baseline opacity, Permittee shall report the results to the Director. [A.A.C. R18-2-306.A.3.c]

b. Daily Monitoring Requirement

Permittee shall record the daily process rates and hours of operation of all material handling facilities. For the purpose of this permit condition material handling facilities shall mean those pieces of equipment marked with a "Y" in the "Material Handling Facility" column of Attachment C of this permit.

[A.A.C. R18-2-721.F]

c. Bi-weekly (Every Two Weeks) Monitoring Requirement [A.A.C. R18-2-306.A.3.c]

(1) A certified Method 9 observer shall conduct a bi-weekly visual survey of visible emissions from the metallic mineral mining units covered by condition III.A when they are in operation.

(2) For Point Sources Covered by Condition III.A

(a) If the observer, during the visual survey, does not see a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location of the observation and results of the observation.

(b) If the observer sees a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.

(c) If the six-minute opacity of the plume is less than the baseline, then the observer shall make a record of the following:

- i) Location, date, and time of the test; and
- ii) The results of the Method 9 observation.

(d) If the six-minute opacity of the plume exceeds the baseline level but is less than the opacity standard, then Permittee shall adjust or repair the controls or equipment, as necessary, to reduce opacity to or below the baseline level. Permittee shall make a record of the following:

- i) Location, date, and time of the test; and
- ii) The results of the Method 9 observation.

(e) If the six-minute opacity of the plume exceeds both the baseline level and the opacity standard, then Permittee shall do the following:

- i) Adjust or repair the controls or equipment to reduce opacity to or below the baseline level; and
- ii) Report it as an excess emission for opacity.

(f) If corrective actions fail to reduce opacity to or below the baseline

level, Permittee shall adopt the following course of action :

- i) Document all corrective action; and
 - ii) Initiate procedures to re-establish the baseline within forty eight hours in accordance with subsection (h) below.
- (g) Permittee shall conduct at least one Method 9 opacity test annually for each stack subject to the requirements of this section, if operated during the calendar year.
- (h) If necessitated by the results of the bi-weekly monitoring, Permittee may re-establish the baseline opacity level. Re-establishment of the baseline shall be performed utilizing the same procedures used in setting up the initial baseline level. Within 10 days of re-establishing the baseline opacity, Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline.

(3) For Fugitive Sources Covered by Condition III.A

- (a) If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location, and the results of the observation.
- (b) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
- (c) If the six-minute opacity of the plume is less than the opacity standard, the observer shall make a record of the following:
 - i) Location, date, and time of the test; and
 - ii) The results of the Method 9 observation.
- (d) If the six-minute opacity of the plume exceeds the opacity standard, then Permittee shall do the following:
 - i) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and
 - ii) Report it as excess emissions.

[A.A.C. R18-2-306.A.3.c]

B. New Source Performance Standards (NSPS) Affected Facilities

Affected Facilities subject to 40 C.F.R. Part 60, Subpart LL ("Standards of Performance for Metallic Mineral Processing Plants") include all equipment marked with a "Y" in the "NSPS" column of Section IV of Attachment C of this permit. All such equipment shall comply with the

following:

1. Emission Limits and Standards

a. Particulate Matter Standard

Permittee shall not cause to be discharged into the atmosphere from an affected facility any stack emissions that contain particulate matter in excess of 0.05 grams per dry standard cubic meter. [40 CFR 60.382(a)(1)]

b. Visible Emissions - Opacity Standard

(1) The Permittee shall not cause to be discharged into the atmosphere from an affected facility any stack emission that exhibit greater than 7 percent opacity, unless the stack emissions are discharged using a wet scrubber emission control device;

(2) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, the Permittee shall not cause to be discharged into the atmosphere from an affected facility any process fugitive emissions that exhibit greater than 10 percent opacity.

[40 CFR 60.382(a)(2), 40 CFR 60.382(b), and A.A.C. R18-2-331]

2. Monitoring, Record Keeping and Reporting

a. Monitoring of Operations

(1) For each scrubber, Permittee shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ± 250 pascals (± 1 inch water) gauge pressure and must be calibrated on an annual basis in accordance with the manufacturer's instructions.

[40 CFR 60.384(a)]

(2) For each scrubber, Permittee shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the scrubbing liquid flow rate to the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ± 5 percent of the design scrubbing liquid flow rate and must be calibrated on an annual basis in accordance with the manufacturer's specifications.

[40 CFR 60.384(b)]

b. Weekly Recording Requirement

Permittee shall record on a weekly basis the measurements of both the change in the pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

c. Bi-weekly (Every Two Weeks) Monitoring Requirement for Fugitive Sources Covered by condition III.B [A.A.C. R18-2-306.A.3.c]

- (1) A certified Method 9 observer shall conduct a bi-weekly visual survey of visible emissions from the metallic mineral mining units covered by condition III.B when they are in operation.
- (2) If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location, and the results of the observation.
- (3) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
- (4) If the six-minute opacity of the plume is less than the opacity standard, then the observer shall make a record of the following:
 - (a) Location, date, and time of the test; and
 - (b) The results of the Method 9 observation.
- (5) If the six-minute opacity of the plume exceeds the opacity standard, then Permittee shall do the following:
 - (a) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and
 - (b) Report it as excess emissions.

d. Semi-annual Reporting Requirement

- (1) Permittee shall submit semi-annual reports to the Director of occurrences when the measurements of the scrubber pressure loss (or gain) or liquid flow rate differ by more than ± 30 percent from the average obtained during the most recent performance test. These reports shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

[40 CFR 60.385(c) and (d) and 306.A.3.c]

- (2) To comply with condition III.B.2.d.(1) above, the Permittee shall use the monitoring devices in Section III.B.2.a to determine the pressure loss of the gas stream through the scrubber and scrubbing liquid flow rate at any time during each particulate matter run, and the average of the three determinations shall be computed.

[40 CFR 60.386(c)]

C. Performance Testing Requirements

[A.A.C. R18-2-306.A.3.c and R18-2-312]

1. Permittee shall conduct particulate matter performance tests on the metallic mineral mining

units subject to the requirements of Section III in accordance with the following schedule, beginning the first year of permit issuance:

Collect one representative sample from two of the following wet scrubber Source IDs 002, 003, 004, 005, 006, or 007 (State enforceable only) : The first 365 day period following permit issuance

Source ID 074 : The second 365 day period following permit issuance

Source ID 112 : The third 365 day period following permit issuance

Source ID 075 : Once during permit term

Source ID 008 : Once during permit term

These performance tests shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A.

2. The following shall be applicable for Source ID's 074 and 112:

- a. The sample volume for each run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250 °F)) in order to prevent water condensation on the filter.

[40 CFR § 60.386(b)(1)]

- b. During the initial performance test of a wet scrubber the Permittee shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

[40 CFR § 60.385(b)]

3. The following shall be applicable for Source IDs 002-007 (State Enforceable Only), 075, 008:

[A.A.C. R18-2-721.H]

- a. The reference methods in 40 CFR 60, Appendix A shall be used to determine compliance with the standards prescribed in conditions III.A.1 as follows:

- (1) Method 5 for the concentration of particulate matter and the associated moisture content;
- (2) Method 1 for sample and velocity traverses;
- (3) Method 2 for velocity and volumetric flow rate;
- (4) Method 3 for gas analysis and calculation of excess air, using the integrated sample technique.

- b. For Method 5, Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Director. The probe and filter holder heating systems in the

sampling train shall be set to provide a gas temperature no greater than 160° C. (320°F).

4. The Permittee shall conduct an annual Method 9 performance test to measure the opacity of process fugitive emissions from affected facilities subject to Section III.B.1.b.(2).
[A.A.C. R18-2-306.A.3.c]

D. Air Pollution Control Requirements

1. For Equipment Marked "N" or "ND" in the NSPS column of Attachment C:

At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the secondary and tertiary crushing circuits and the associated wet scrubbers in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.

[A.A.C. R18-2-306.A.2 & R18-2-331]

2. For NSPS equipment:

At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the secondary and tertiary crushing circuits and the associated wet scrubbers in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.

[40 CFR 60.11(d) & R18-2-331]

3. Permittee shall maintain and operate all other pollution control devices including spray bars, duct work and hoods used to capture particulate matter emissions to meet the emission standards in condition III.A.1.

[A.A.C. R18-2-306.A.2 and R18-2-331]

E. Permit Shield

1. Except as provided in Section III.E.2 below, compliance with conditions of Section III shall be deemed compliance with Arizona SIP Rule R9-3-521(A)(2)(b), A.A.C. R18-2-721(B) and (F), A.A.C. R18-2-702(B) and (c), 40 CFR 60.382(a)(1), (a)(2), and (b), 40 CFR 60.384(a) and (b), 40 CFR 60.385(b) through (d), 40 CFR 60.386(c), and 40 CFR 60.11(d), for the equipment subject to Section III.

[A.A.C. R18-2-325]

2. With regard to the equipment marked with an "ND" in the "NSPS" column of Section IV of Attachment C ("ND Sources"), there are unresolved NSPS applicability issues, which are the subject of Findings and Notices of Violation Docket Nos. R9-98-1, R9-00-25, and R9-01-17. The permit at this time neither addresses nor shields the Permittee from enforcement actions related to the applicability of 40 CFR Part 60, Subparts A and LL to the ND sources. Nothing in the permit precludes assertions that the requirements of 40 CFR 60, Subparts A and LL currently apply to the ND sources. The Director's determination that the provisions of Section III are "State Enforceable Requirements" for the ND sources in no way implies that such equipment have been determined to be "existing sources", as that term is defined in State SIP R9-3-101 or A.A.C. R18-2-101.

IV. REQUIREMENTS FOR FINE ORE STORAGE AND HANDLING

A. Non-New Source Performance Standard (Non-NSPS) Affected Facilities

Affected Facilities subject to the Standards of Performance for Existing Nonferrous Metals Industry Sources include all equipment marked with an "N" in the "NSPS" column of Section V of Attachment C of this permit. All such equipment shall comply with the following:

1. Emission Limits and Standards

a. Particulate Matter Standard

- (1) Standard Applicable Until A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County

[State SIP R9-3-521.A.2.b]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

$$E = 17.31P^{0.16}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour
P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

- (2) Standard Applicable On and After the Date A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County

[A.A.C. R18-2-721.B]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

$$E = 55.0P^{0.11} - 40$$

Where E and P are defined as indicated in paragraph (1) above.

b. Visible Emissions - Opacity Standard

[A.A.C. R18-2-702.B]

- (1) The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 40 percent as measured by EPA Reference Method 9.
- (2) Where the presence of uncombined water is the only reason for the exceedance of this visible emissions requirement, such exceedance shall not

constitute a violation.

2. Monitoring, Recordkeeping, and Reporting Requirements

a. Initial Requirement

Within 180 days of issuance of this permit, Permittee shall conduct certified Method 9 observations on each scrubber while they are operating at normal representative working conditions to establish a baseline opacity level. Within 30 days of establishing the baseline opacity, Permittee shall report the results to the Director.

[A.A.C. R18-2-306.A.3.c]

b. Daily Monitoring Requirement

Permittee shall record the daily process rates and hours of operation of all material handling facilities. For the purpose of this permit condition material handling facilities shall mean those pieces of equipment marked with a "Y" in the "Material Handling Facility" column of Attachment C of this permit.

[A.A.C. R18-2-721.F]

c. Bi-weekly (Every Two Weeks) Monitoring Requirement

[A.A.C. R18-2-306.A.3.c]

- (1) A certified Method 9 observer shall conduct a bi-weekly visual survey of visible emissions from the metallic mineral mining units covered by this section when they are in operation.
- (2) For Point Sources Covered by this Section
 - (a) If the observer, during the visual survey, does not see a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location of the observation and results of the observation.
 - (b) If the observer sees a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
 - (c) If the six-minute opacity of the plume is less than the baseline, then the observer shall make a record of the following:
 - i) Location, date, and time of the test; and
 - ii) The results of the Method 9 observation.
 - (d) If the six-minute opacity of the plume exceeds the baseline level but is less than the opacity standard, Permittee shall adjust or repair the controls or equipment, as necessary, to reduce opacity to or below the baseline level. Permittee shall make a record of the following:

- i) Location, date, and time of the test; and
 - ii) The results of the Method 9 observation.
 - (e) If the six-minute opacity of the plume exceeds both the baseline level and the opacity standard, then Permittee shall do the following:
 - i) Adjust or repair the controls or equipment to reduce opacity to or below the baseline level; and
 - ii) Report it as an excess emission for opacity.
 - (f) If corrective actions fail to reduce opacity to or below the baseline level, then Permittee shall adopt the following course of action :
 - i) Document all corrective action; and
 - ii) Initiate procedures to re-establish the baseline within forty eight hours in accordance with subsection (h).
 - (g) Permittee shall conduct at least one Method 9 opacity test annually for each stack subject to the requirements of this section.
 - (h) If necessitated by the results of the bi-weekly monitoring, Permittee may re-establish the baseline opacity level. Re-establishment of the baseline shall be performed utilizing the same procedures used in setting up the initial baseline level. Within 30 days of re-establishing the baseline opacity, Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline.
- (3) For Fugitive Sources Covered by this Section
- (a) If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
 - (b) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
 - (c) If the six-minute opacity of the plume is less than the opacity standard, the observer shall make a record of the following:
 - i) Location, date, and time of the test; and
 - ii) The results of the Method 9 observation.
 - (d) If the six-minute opacity of the plume exceeds the opacity standard, Permittee shall do the following:

- i) adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and
- ii) and report it as excess emissions.

B. Air Pollution Control Requirements

1. The following conditions shall apply :

At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the Fine Ore Storage and Handling circuits and the associated wet scrubbers in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.

[A.A.C. R18-2-306.A.2 & R18-2-331]

2. Permittee shall maintain and operate spray bars, duct work and hoods used to minimize particulate matter emissions to meet the emission standards in condition IV.A.1.

[A.A.C. R18-2-306.A.2 & R18-2-331]

C. Performance Testing Requirements

1. Permittee shall conduct particulate matter performance tests on the equipment subject to the requirements of Section IV in accordance with the following schedule:

[A.A.C. R18-2-306.A.3.c and R18-2-312]

Source ID 018-033 : One representative sample, once during permit term

Source ID 009: Once during permit term

2. The following shall be applicable:

[A.A.C. R18-2-721.H]

- a. The reference methods in 40 CFR 60, Appendix A shall be used to determine compliance with the standards prescribed in condition IV.A.1 as follows:

- (1) Method 5 for the concentration of particulate matter and the associated moisture content;
- (2) Method 1 for sample and velocity traverses;
- (3) Method 2 for velocity and volumetric flow rate;
- (4) Method 3 for gas analysis and calculation of excess air, using the integrated sample technique.

- b. For Method 5, Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Director. The probe

and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 160° C. (320°F).

D. Permit Shield

Compliance with the conditions of Section IV shall be deemed compliance with Arizona SIP Rule R9-3-521(A)(2)(b), A.A.C. R18-2-721(B) and (F), and A.A.C. R18-2-702(B), for the equipment subject to this Section.

[A.A.C. R18-2-325]

V. REQUIREMENTS FOR THE MOLYBDENUM PLANT

Except for Source ID 041, Affected Facilities subject to the Standards of Performance for Existing Nonferrous Metals Industry Sources include all equipment marked with an "N" or "N/A" in the "NSPS" column of Section VI of Attachment C of this permit. Source ID 041 shall comply with the requirements of Section V (except for Section V.A.1.a), such requirements being "State Enforceable Requirements" as to Source ID 041 only. All other equipment shall comply with the following:

A. Emission Limits and Standards

1. Particulate Matter Standard

[State SIP R9-3-521.A.2.a and -b]

- a. Standard Applicable Until A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County, except for Source ID 041

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:

$$E = 3.59P^{0.62}$$

For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:

$$E = 17.31P^{0.16}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour
P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

- b. Standard Applicable On and After the Date A.A.C R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County, except for Source ID 041

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the

amount calculated by the following equation:

For Process Sources Having Process Weight Rates of 30 Tons per-Hour or Less:

$$E = 4.10P^{0.67}$$

For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:

$$E = 55.0P^{0.11} - 40$$

Where E and P are defined as indicated in paragraph V.A.1.a above.

- c. The following shall apply to Source ID 041

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:

$$E = 4.10P^{0.67}$$

For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:

$$E = 55.0P^{0.11} - 40$$

Where E and P are defined as indicated in paragraph V.A.1.a above.

[A.A.C. R18-2-721.B]

2. Visible Emissions - Opacity Standard

- a. The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 40 percent as measured by EPA Reference Method 9.

[A.A.C. R18-2-702.B]

- b. Where the presence of uncombined water is the only reason for the exceedence of this visible emissions requirement, such exceedence shall not constitute a violation.

[A.A.C. R18-2-702.C]

3. Reduced Sulfur Standard

Permittee shall not cause, allow or permit to be discharged into the atmosphere from any dryer or roaster the operating temperature of which exceeds 700 °F., reduced sulfur in excess of ten percent of the sulfur entering the process as feed. Reduced sulfur includes sulfur equivalent from all sulfur emissions including sulfur dioxide, sulfur trioxide, and sulfuric acid.

[A.A.C. R18-2-721.E]

B. Monitoring, Recordkeeping, and Reporting Requirement

1. Initial Requirement

Within 180 days of issuance of this permit, Permittee shall conduct certified Method 9 observations on the scrubbers and baghouses while they are operating at normal representative working conditions to establish a baseline opacity level.

[A.A.C. R18-2-306.A.3.c]

2. Daily Monitoring Requirement

Permittee shall record the daily process rates and hours of operation of all material handling facilities. For the purpose of this permit condition material handling facilities shall mean those pieces of equipment marked with a "Y" in the "Material Handling Facility" column of Attachment C of this permit.

[A.A.C. R18-2-721.F]

3. Bi-weekly (Every Two Weeks) Monitoring Requirement

[A.A.C. R18-2-306.A.3.c]

a. A certified Method 9 observer shall conduct a bi-weekly visual survey of visible emissions from the metallic mineral mining units covered by this section when they are in operation.

b. For Point Sources Covered by this Section

(1) If the observer, during the visual survey, does not see a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location of the observation and results of the observation.

(2) If the observer sees a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.

(3) If the six-minute opacity of the plume is less than the baseline, the observer shall make a record of the following:

- (a) Location, date, and time of the test; and
- (b) The results of the Method 9 observation.

(4) If the six-minute opacity of the plume exceeds the baseline level but is less than the opacity standard, Permittee shall adjust or repair the controls or equipment, as necessary, to reduce opacity to or below the baseline level. Permittee shall make a record of the following:

- (a) Location, date, and time of the test; and
- (b) The results of the Method 9 observation.

(5) If the six-minute opacity of the plume exceeds both the baseline level and the

opacity standard, then Permittee shall do the following:

- (a) Adjust or repair the controls or equipment to reduce opacity to or below the baseline level; and
 - (b) Report it as an excess emission for opacity.
- (6) If corrective actions fail to reduce opacity to or below the baseline level, Permittee shall adopt the following course of action :
- (a) Document all corrective action; and
 - (b) Initiate procedures to re-establish the baseline within forty eight hours in accordance with subsection (8).
- (7) Permittee shall conduct at least one Method 9 opacity test annually for each stack subject to the requirements of this section.
- (8) If necessitated by the results of the bi-weekly monitoring, Permittee may re-establish the baseline opacity level. Re-establishment of the baseline shall be performed utilizing the same procedures used in setting up the initial baseline level. Within 10 days of re-establishing the baseline opacity, Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline.

c. For Fugitive Sources Covered by this Section

- (1) If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
- (2) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
- (3) If the six-minute opacity of the plume is less than the opacity standard, the observer shall make a record of the following:
 - (a) Location, date, and time of the test; and
 - (b) The results of the Method 9 observation.
- (4) If the six-minute opacity of the plume exceeds the opacity standard, Permittee shall do the following:
 - (a) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and
 - (b) Report it as excess emissions.

[A.A.C. R18-2-306.A.3.c]

4. Molybdenum Roasting Sulfur Monitoring and Recordkeeping

[A.A.C. R18-2-306.A.3.c]
[State Enforceable Only]

a. Normal Operation

The pH of each scrubber underflow shall be measured four times per operating day. If the pH of the scrubber underflow is below 3.5 standard units (s.u.), the operator shall conduct a confirming pH measurement within three minutes. If that measurement is below pH 3.5 s.u., Permittee shall discontinue molybdenum sulfide feed to the affected roaster and emissions from the affected roaster will be vented to the unaffected roaster offgas system as soon as possible. If roaster offgas system maintenance is necessary, the Scrubber/Equipment Maintenance Operating Procedures described below will be initiated. Otherwise, within 30 minutes after repairs are completed and normal operations begins, the operator shall verify the scrubber pH level is greater than 3.5 s.u. and record the pH measurement.

b. Scrubber/Equipment Maintenance Operating Procedures

- (1) When planned maintenance activities require the implementation of the Scrubber/Equipment Maintenance Operating Procedures, Permittee shall record the time when feed to the affected roaster is discontinued and the time when feed is resumed.
- (2) Within 30 minutes of switching from Scrubber/Equipment Maintenance Operating Procedures to Normal Operation, the operator shall make a thorough inspection of all equipment in the roaster offgas system, consisting of the roaster and each piece of subsequent control equipment, to confirm equipment settings. This shall include verification that all gates are seated, the scrubber slurry pumps are in operation and the scrubber pH level is greater than 3.5 s.u.. The results of the inspection shall be recorded.

- c. Permittee shall sample and analyze the molybdenum sulfide concentrate feed sulfur content daily. Permittee shall record and maintain daily logs of the sulfur contained in the feed and the feed rate to each roaster.
- d. Permittee shall maintain a log of roaster operations and the operation of each component of roaster offgas system.

C. Performance Testing Requirements

[A.A.C. R18-2-306.A.3.c and -312]

1. Molybdenum Roaster - Main Stack

- a. Permittee shall conduct annual performance tests for particulate matter from the molybdenum roasters. These performance tests shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A.
- b. Permittee shall conduct an annual performance test for sulfur emissions from the molybdenum roasters. A sample of the inlet molybdenum feed shall be sampled during the performance test. The sample of the inlet molybdenum feed shall be analyzed for sulfur content. The roaster performance tests shall be conducted in accordance with Reference Method 6 in 40 CFR 60, Appendix A. The pH of the scrubber slurry underflow shall be recorded during the performance test and reported as part of the test results.

[State Enforceable Only]

2. Molybdenum Roaster - Maintenance Stack

[State Enforceable Only]

- a. Permittee shall conduct roaster profile tests and Feed Termination Delay tests, as described below, if the roaster off-gases have been vented to the maintenance stack at any time in the current or preceding calendar year.
- b. Permittee shall conduct a semi-annual roaster profile test to determine the feed termination delay time required for 90 percent of the sulfur in the feed to be removed, if the off-gases from the idled roaster are vented to the maintenance stack. The following procedures shall be used in conducting the roaster profile test:
 - (1) Under normal operating conditions, maintain the roaster feed at a constant rate.
 - (2) Obtain samples of the roaster feed and the discharge of each hearth in the roaster, and analyze each sample for sulfur content.
 - (3) Calculate the time required to capture 90 percent of the sulfur in the feed.
 - (4) The new data generated through the semi-annual roaster profile shall be added to the existing database to determine the Feed Termination Delay time using statistical analysis, specifically a 't' distribution test with a 99 percent confidence level.
- c. The results of the semi-annual roaster profile test shall be verified using the Feed Termination Delay test. This test shall be conducted annually, and as follows:
 - (1) Under normal operating conditions, the roaster off-gas shall be sampled for sulfur concentration. The roaster off-gas shall be sampled and analyzed in accordance with EPA Reference Methods 6 or 6C and 8.
 - (2) All samples shall be taken from a sampling point prior to the lime slurry scrubber.
 - (3) A sample of the roaster feed shall be taken concurrently with the termination of the roaster feed, and analyzed for sulfur content.
 - (4) The sampling period shall begin after the roaster feed is terminated.
 - (5) The sampling period shall end when the concentration of sulfur at the sampling point is less than ten percent of the initial concentration.
 - (6) The off-gas sulfur concentration shall be compared to the sulfur content in the feed to verify the sulfur profile test results.

3. Performance Testing Requirements

Permittee shall conduct particulate matter performance tests on the equipment subject to the requirements of Section V in accordance with the following schedule:

Source ID 042 : Once during permit term

Source ID 048 : Once during permit term

Source ID 059 : Once during permit term

Source ID 041, 053, 054 (of this Section), and 063 (equipment covered by Section VII) : One representative sample, once during permit term

4. The test methods and procedures required by this Section are as follows:

a. The reference methods in 40 CFR 60, Appendix A shall be used to determine compliance with the standards prescribed in conditions V.A.1 and V.A.3 as follows:

- (1) Method 5 for the concentration of particulate matter and the associated moisture content;
- (2) Method 1 for sample and velocity traverses;
- (3) Method 2 for velocity and volumetric flow rate;
- (4) Method 3 for gas analysis and calculation of excess air, using the integrated sample technique;
- (5) Method 6 for concentration of SO₂.

b. For Method 5, Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the Director. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 160° C. (320°F).

c. For Method 6, the sampling site shall be the same as that selected for Method 5. The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m (3.28 ft). For Method 6, the sample shall be extracted at a rate proportional to the gas velocity at the sampling point.

d. For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

[A.A.C. R18-2-721.H]

D. Air Pollution Control Requirements

[A.A.C. R18-2-306.A.2, A.A.C. R18-2-721.E, and R18-2-331]

1. Permittee shall maintain and operate the wet scrubbers, the cyclones, the mist eliminators and the electrostatic precipitators associated with the molybdenum plant to minimize particulate matter emissions.

2. Permittee shall discontinue molybdenum sulfide feed to the affected roaster for the feed termination delay time prior to scrubber/equipment maintenance, if off-gases are to be vented to the maintenance stack.

[State Enforceable Only]

3. Off-gases from the idled roaster shall be vented to:

- a. the operating roaster train, or
- b. the maintenance stack only after the feed termination delay time has elapsed.

[State Enforceable Only]

4. The feed termination delay time shall be determined through the semi-annual roaster profile and verified through the annual Feed Termination Delay Test, and shall be posted in the molybdenum roaster control room. The feed termination delay time is defined as the amount of time for 90 percent of the reduced sulfur in the roaster feed to be removed.

[State Enforceable Only]

5. Roof mode operation is prohibited. Roof mode means to vent roaster off-gas directly to the atmosphere through stacks in the roof of each roaster.

[State Enforceable Only]

6. At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the molybdenum plant and the associated baghouses, spray bars, duct work and hoods in a manner consistent with good air pollution control practices for minimizing particulate matter emissions.

[A.A.C. R18-2-306.A.2 & R18-2-331]

E. Permit Shield

1. Except as provided in Section V.E.2 below, compliance with conditions of Section V shall be deemed compliance with Arizona SIP Rule R9-3-521(A)(2)(a) and (b), A.A.C. R18-2-702(B) and (c), and A.A.C. R18-2-721(E), (F) and (H), for the equipment subject to Section V.

[A.A.C. R18-2-325]

2. With regard to Source ID 041 (Unleached Molybdenum Sulfide Dryers) and Source IDs 056, 058, 118, and 119 (Molybdenum Roasting), there are unresolved applicability issues, which are the subject of Findings and Notices of Violation, Docket Nos. R9-98-1, R9-00-25, and R9-01-17. The permit at this time neither addresses nor shields the Permittee from enforcement actions related to the applicability of State SIP R9-3-301, R9-3-304, R9-3-305, and R9-3-306 to Source ID 041. The permit at this time neither addresses nor shields the Permittee from enforcement actions related to the applicability of State SIP R9-3-306 and R9-3-521 as to Source IDs 056, 058, 118, and 119. The permit in no way implies that a determination has been made as to the applicability of State SIP R9-3-521 to Source ID 041, or that Source ID 041 is an "existing source" as that term is defined in State SIP R9-3-101.

VI. REQUIREMENTS FOR THE NATURAL GAS FIRED HEATERS AND BOILERS

Affected Facilities subject to the Standards of Performance for Existing Fossil-Fuel Fired Industrial and Commercial Equipment include all equipment marked with an "N" in the "NSPS" column of Section VII of Attachment C of this permit. All such equipment shall comply with the following:

A. Emission Limits and Standards

1. Particulate Matter Standard

[A.A.C. R18-2-724.C.1]

Permittee shall not cause, allow or permit the emission of particulate matter, caused by combustion of fuel in the heaters or boilers in excess of the amount calculated by the following equation:

$$E = 1.02 Q^{0.769}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

Q = the heat input in million Btu per hour.

2. Visible Emissions - Opacity Standard [A.A.C. R18-2-724.J]

Permittee shall not cause, allow or permit to be emitted into the atmosphere from the heaters or boilers, smoke which exceeds 15 percent opacity.

3. Fuel Limitation [A.A.C. R18-2-306.A.2]

Permittee shall burn only natural gas or propane as fuel in the heaters and boilers.

B. Monitoring, Record Keeping and Reporting

1. Permittee shall report all six-minute periods in which the opacity of any plume or effluent exceeds 15 percent from the heaters and boilers. [A.A.C. R18-2-724.J]
2. Permittee shall maintain a vendor-approved copy of that part of the Federal Energy Regulatory Commission (FERC) approved Tariff agreement that contains the sulfur content and the lower heating value of the pipeline quality natural gas. [A.A.C. R18-2-306.A.3]

C. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-724(c)(1) and (J), for the equipment subject to this Part.

[A.A.C. R18-2-325]

VII. REQUIREMENTS FOR THE LIME HANDLING FACILITY

A. Emission Limitations/Standards

1. Particulate Matter Standard

- a. Standard Applicable Until A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County [State SIP R9-3-521.A.2.a]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere in any one hour from any process source in total quantities in excess of the amount calculated by the following equation:

$$E = 3.59P^{0.62}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour
P = the process weight rate in tons-mass per hour.

- b. Standard Applicable On and After the Date A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County [A.A.C. R18-2-721.B]

Permittee shall not cause, allow, or permit the discharge of particulate matter into the

atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:

$$E = 4.10P^{0.67}$$

Where E and P are defined as indicated in paragraph (a) above.

2. Visible Emissions - Opacity Standard

[A.A.C. R18-2-702.B]

The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 40 percent as measured by EPA Reference Method 9.

B. Air Pollution Control Requirements

1. Permittee shall operate the wet scrubber associated with the lime handling facility.

[A.A.C. R18-2-306.A.2 & R18-2-331]

2. Permittee shall maintain and operate at all times all other pollution control devices including spray bars, duct work and hoods used to capture particulate matter emissions to meet the emission standards in condition VII.A.

[A.A.C. R18-2-306.A.2 & R18-2-331]

C. Monitoring, Recordkeeping, and Reporting Requirements

1. Initial Requirement

Within 180 days of issuance of this permit, Permittee shall conduct certified Method 9 observations on the wet scrubber at the lime handling facility while it is operating at normal representative working conditions to establish a baseline opacity level. Within 30 days of establishing the baseline opacity, Permittee shall report the results to the Director.

[A.A.C. R18-2-306.A.3.c]

2. Bi-weekly (Every Two Weeks) Monitoring Requirement

[A.A.C. R18-2-306.A.3.c]

- a. A certified Method 9 observer shall conduct a bi-weekly visual survey of visible emissions from the metallic mineral mining units covered by Section VII when they are in operation.

b. For Point Sources Covered by Section VII

- (1) If the observer, during the visual survey, does not see a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location of the observation and results of the observation.
- (2) If the observer sees a plume from the point source that on an instantaneous basis appears to exceed the baseline level, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
- (3) If the six-minute opacity of the plume is less than the baseline, the observer shall make a record of the following:

- (a) Location (stack identification), date, and time of the test; and
 - (b) The results of the Method 9 observation.
- (4) If the six-minute opacity of the plume exceeds the baseline level but is less than the opacity standard, then Permittee shall adjust or repair the controls or equipment, as necessary, to reduce opacity to or below the baseline level. Permittee shall make a record of the following:
- (a) Location (stack identification), date, and time of the test; and
 - (b) The results of the Method 9 observation.
- (5) If the six-minute opacity of the plume exceeds both the baseline level and the opacity standard, then Permittee shall do the following:
- (a) Adjust or repair the controls or equipment to reduce opacity to below the baseline level; and
 - (b) Report it as an excess emission for opacity.
- (6) If corrective actions fail to reduce opacity to or below the baseline level, Permittee shall adopt the following course of action :
- (a) Document all corrective action; and
 - (b) Initiate procedures to re-establish the baseline within forty eight hours in accordance with subsection (8).
- (7) Permittee shall conduct at least one Method 9 opacity test annually for each stack subject to the requirements of Section VII.
- (8) If necessitated by the results of the bi-weekly monitoring, Permittee may re-establish the baseline opacity level. Re-establishment of the baseline shall be performed utilizing the same procedures used in setting up the initial baseline level. Within 30 days of re-establishing the baseline opacity, Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline.
- c. For Fugitive Sources Covered by Section VII [A.A.C. R18-2-306.A.3.c]
- (1) If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location, and the results of the observation.
 - (2) If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
 - (3) If the six-minute opacity of the plume is less than the opacity standard, then the observer shall make a record of the following:
 - (a) Location, date, and time of the test; and
 - (b) The results of the Method 9 observation.

- (4) If the six-minute opacity of the plume exceeds the opacity standard, then Permittee shall do the following:

- (a) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and
- (b) Report it as excess emissions.

D. Permit Shield

[A.A.C. R18-2-325]

Compliance with the conditions of this Part shall be deemed compliance with Arizona SIP Rule R9-3-521(A)(2)(a), A.A.C. R18-2-702(B), and A.A.C. R18-2-721(B), for the equipment subject to this Part.

VIII. REQUIREMENTS FOR THE ROAD ROCK CRUSHING PLANT

A. Emission Limits and Standards

1. Particulate Matter Standard

[State SIP R9-3-522.A.2.a and -b]

- a. Standard Applicable Until A.A.C. R18-2-722.B Is Approved as Part of the State Implementation Plan for Pima County.

Permittee shall not cause, suffer, allow or permit the discharge of particulate matter into the atmosphere except as fugitive emissions, in any one hour from any gravel or crushed stone processing plant in total quantities in excess of the amount calculated by the equation set forth below:

For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:

$$E = 3.59P^{0.62}$$

For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:

$$E = 17.31P^{0.16}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour

P = the process weight rate in tons-mass per hour. The total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

- b. Standard Applicable On and After the Date A.A.C R18-2-722.B Is Approved as Part of the State Implementation Plan for Pima County

Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere except as fugitive emissions, in any one hour from any gravel or crushed stone processing plant in total quantities in excess of the amount calculated by the equation set forth below:

For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:

$$E = 4.10P^{0.67}$$

For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:

$$E = 55.0P^{0.11} - 40$$

Where E and P are defined as indicated in paragraph VIII.A.1.a above.

2. Visible Emissions - Opacity Standard

The opacity of emissions from any of the equipment into the atmosphere shall not be greater than 40 percent as measured by EPA Reference Method 9.

[A.A.C. R18-2-702.B]

B. Air Pollution Control Requirements

1. Permittee shall maintain and operate the spray bars used to reduce particulate matter emissions to meet the emission standards in condition VIII.A. [A.A.C. R18-2-306.A.2 & R18-2-331]
2. Spray bar pollution controls shall be utilized in accordance with "EPA Control of Air Emissions From Process Operation In The Rock Crushing Industry" (EPA 340/1-79-002), "Wet Suppression System" (pages 15-34), amended as of January, 1979 (and no future amendments or editions), as incorporated herein by reference and on file with the Office of the Secretary of State, with placement of spray bars and nozzles as required by the Director to minimize air pollution. [A.A.C. R18-2-722.D]

C. Monitoring, Recordkeeping, and Reporting Requirements

1. Permittee shall record the daily production rates of the Road Rock Crushing Plant. [A.A.C. R18-2-722.G and -306.A.3.c]
2. Bi-weekly Monitoring for Fugitive Sources Covered by Section VIII [A.A.C. R18-2-306.A.3.c]
 - a. A certified Method 9 observer shall conduct a bi-weekly visual survey of visible emissions from the units covered by Section VIII when they are in operation.
 - b. If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.
 - c. If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation of the plume.
 - d. If the six-minute opacity of the plume is less than the opacity standard, the observer shall make a record of the following:
 - (1) Location, date, and time of the test; and
 - (2) The results of the Method 9 observation.
 - e. If the six-minute opacity of the plume exceeds the opacity standard, then Permittee shall do

the following:

- (1) Adjust or repair the controls or equipment to reduce opacity to below the opacity standard; and
- (2) Report it as excess emissions.

D. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-702(B), A.A.C. R18-2-722(B), (D), and (G), for the equipment subject to this Part.

[A.A.C. R18-2-325]

IX. REQUIREMENTS FOR THE SOLUTION EXTRACTION AND ELECTROWINNING (SX/EW) AND TWIN BUTTES ELECTROWINNING TANKHOUSE PROCESS

A. Emission Limitations/Standards

1. Permittee shall not cause the emission of gaseous or odorous materials from equipment and operations associated with the processes described in Section IX in such quantities or concentrations as to cause air pollution. [A.A.C. R18-2-730.D]
2. Materials including solvents or other volatile compounds, acids, and alkalis utilized in the processes described in Section IX shall be processed, stored, used, and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage, or discharge, the installation and use of such control methods, devices, or equipment shall be mandatory. [A.A.C. R18-2-730.F]
3. Where a stack, vent or other outlet is at such a level that fumes, gas, mist, odor, smoke, vapor, or any combination thereof constituting air pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent or other outlet by Permittee thereof to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to the adjoining property. [A.A.C. R18-2-730.G]

B. Air Pollution Control Requirements

[A.A.C. R18-2-306.A.2 and R18-2-331]

1. Permittee shall maintain the existing covers on the mixer settler tanks to control emissions from the Solution Extraction Plant.
2. Permittee shall use one or more of the following methods to control emissions from the Electrowinning Tankhouse:
 - a. Foam;
 - b. Blankets;
 - c. Surfactants;
 - d. Thermal retention balls; or
 - e. Other effective means of controlling sulfuric acid emissions approved by the Director.

C. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

Permittee shall maintain a record of the control measures used at the SX/EW plant.

D. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-730(D), (F) and (G), for the equipment subject to this Part.

[A.A.C. R18-2-325]

X. REQUIREMENTS FOR THE GASOLINE TANKS

- A.** Permittee shall equip all gasoline tanks with a submerged filling device, or acceptable equivalent, for the control of hydrocarbon emissions. [A.A.C. R18-2-710.B]

B. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-710(B), for the equipment subject to this Part.

[A.A.C. R18-2-325]

XI. REQUIREMENTS FOR NON-POINT SOURCES

A. Open Areas, Roadways and Streets, Material Handling, Storage Piles

1. Emission Limitations/Standards

- a. Permittee shall not cause, allow or permit visible emissions from open areas, roadways and streets, storage piles or material handling in excess of 40 % opacity measured in accordance with the Arizona Testing Manual, Reference Method 9. [A.A.C. R18-2-612]
- b. Permittee shall employ at least one of the following reasonable precautions, or any other method as proposed by Permittee and approved by the Director (following compliance with any applicable air permit revision mechanism), to prevent excessive amounts of particulate matter from becoming airborne:

- (1) Use dust suppressants or soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, or barring access when constructing, using, altering, repairing, demolishing, clearing, or leveling a building or its appurtenances, a driveway, a parking area, or a vacant lot, or when moving or excavating earth.

In addition to the above, the following have been identified as reasonable precautions:

Applying wetting agents, stemming, optimizing blast pattern, controlling oxygen balance of explosives during blast operations, minimize material drop height, temporary paving, road cover, controlling vehicle access, limiting vehicle speed, revegetation, hydro-seeding, hydro-mulching, mulching, wet sweeping, vacuuming, wind fence, wind break, shrouding, skirting, enclosing, contouring, animals, soil adhesives, compaction, agglomeration, inherent moisture content, and encrustation.

[A.A.C. R18-2-604.A]

- (2) Apply temporary paving, dust suppressants, wetting down, or detouring when using,

repairing, constructing or reconstructing a roadway.

In addition to the above, the following have been identified as reasonable precautions:

Applying wetting agents, controlling vehicle access, limiting vehicle speed, revegetation, hydro-seeding, hydro-mulching, mulching, landscaping, wet sweeping, vacuum, wind fence, wind break, covering, contouring, usage of soil adhesives, usage of soil stabilizers, compaction, usage of decomposed granite, agglomeration, inherent moisture content, and encrustation.

[A.A.C.R18-2-605.A]

- (3) Apply dust suppressants, wetting, or cover the load when transporting materials likely to give rise to airborne dust.

In addition to the above, the following have been identified as reasonable precautions:

Applying wetting agents, minimizing material drop height, limiting vehicle speed, wind break, covering, agglomeration, inherent moisture content, and encrustation.

[A.A.C.R18-2-605.B]

- (4) Use spray bars, wetting, wetting agents, dust suppressants, covers, or hoods when crushing, screening, handling, transporting, or conveying material that is likely to result in significant amounts of airborne dust.

In addition to the above, the following have been identified as reasonable precautions:

Minimizing material drop height, wind fence, wind break, shrouding, skirting, enclosing, contouring, inherent moisture content, and agglomeration.

[A.A.C.R18-2-606]

- (5) Use chemical stabilization, wetting, or covering when stacking, piling or otherwise storing organic or inorganic dust-producing material.

In addition to the above, the following have been identified as reasonable precautions:

Wind fence, wind break, shrouding, skirting, enclosing, covering, contouring, agglomeration, inherent moisture content, and encrustation.

[A.A.C.R18-2-607.A]

- (6) Operate stacking and reclaiming machinery utilized at storage piles at all times with a minimum fall of material and in such manner, or with the use of spray bars and wetting agents.

In addition to the above, the following have been identified as reasonable precautions:

Wetting, wind fence, wind break, shrouding, skirting, enclosing, covering, contouring, inherent moisture content, and agglomeration.

[A.A.C.R18-2-607.B]

- (7) Use wetting, chemical stabilization, or revegetation when constructing mineral tailing piles.

- (a) In addition to the above, the following have been identified as reasonable precautions:

Applying wetting agents, maximizing the wet surface area, barring or controlling vehicle access, limiting vehicle speed, hydro-seeding, hydro-mulching, mulching, landscaping, wind fence, wind break, covering, contouring, animals, soil adhesives, soil stabilizers, compaction, usage of decomposed granite, agglomeration, and encrustation.

[A.A.C. R18-2-608]

- (b) The following measures at the Tailing Impoundment have been determined to achieve the requirements of A.A.C. R18-2-608: New tailing dam roads, constructed as part of pipeline raises, may be capped with native dirt. Heavily traveled perimeter roads shall be treated with a dust suppressant, as necessary. Active berms and construction areas shall be sprayed with water, as necessary. The wet dam construction method shall be used to control the surface of the impoundment, maintaining the majority of the impoundment surface wet or encrusted, while the remaining area is under construction. After heavy rainfall events (sufficient to cause surface runoff and flushing of natural dust suppressing surface salts) if the upper most layer becomes susceptible to wind erosion, a dust suppressant may be applied to the impoundment surface area requiring additional control.

[Order of Abatement A-174-97, A.A.C. R18-2-608]

- (8) Use wetting agents or dust suppressants before the cleaning of any site, roadway, or alley. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means.

In addition to the above, the following have been identified as reasonable precautions:

Wetting, chip seal, gravel, temporary paving, controlling vehicle access, limiting vehicle speed, revegetation, inherent moisture content, and hydro-seeding.

[A.A.C.R18-2-804.B]

2. Monitoring, Reporting, and Recordkeeping

- a. Permittee shall maintain records of the dates on which any of the activities listed in conditions XI.A.1.b.(1) through (8) of this Attachment were performed and control measures employed. [A.A.C R18-2-306.A.3.c]
- b. In lieu of condition XI.A.2.a above, Permittee may maintain a Non-Point Source Monitoring Plan as a means of monitoring and recordkeeping for any of the activities listed in XI.A.1.b.(1) through (8) of this Attachment. [A.A.C R18-2-306.A.3.c]
- (1) If the Non-Point Source Monitoring Plan has not been submitted to the Director as part of the Class I application form, Permittee may submit a significant revision pursuant to A.A.C. R18-2-320 stating an intent to rely on a Non-Point Source Monitoring Plan. The Non-Point Source Monitoring Plan shall be submitted with the Significant Revision application.
- (2) The Non-Point Source Monitoring Plan shall describe the methods Permittee will use

to comply with the requirements of Section XI. The plan shall contain the following minimum elements of information :

- (a) Types of control measures employed on an activity-specific basis;
 - (b) Frequency of application of control measures; and
 - (c) A system for documenting variations from the strategy outlined in the Non-Point Source Monitoring Plan.
- (3) If Permittee relies on "inherent moisture content" as a reasonable precaution for minimizing particulate emissions caused by traffic over haul roads, the dates of the period for which this control measure was used shall be recorded.
- (4) Permittee may add any method listed in conditions XI.A.1.b.(1) through (8) to the list of control methods identified in the Non Point Source Monitoring Plan. Such changes shall be recorded, and a notification shall be sent to the Director within 10 days following the change. In addition, Permittee may add any method approved hereafter by the Director pursuant to condition XI.A.1.b to the list of control methods identified in the Non-Point Source Monitoring Plan by complying with the applicable permitting mechanism if a permit revision is required, and in any other case by recording the change, and providing a notification to the Director within 10 days following the change.
- c. Permittee shall complete the Tailings Impoundment Environmental Activities Report weekly. This report shall include, when applicable, the current area of tailings deposition, the number of loads applied for each water truck, location of cattle which are part of the Holistics Resource Management plan, the areas of hydroseeding, and the areas of chemical dust suppressant application. On a semiannual basis, the report will include any recommendations for improving dust management at the Tailings Impoundment based on the results of a semiannual checklist audit of compliance with the measures specified in XI.A.1.b.(7).(b).

[A.A.C. R18-2-306.A.3.c]
- d. Permittee shall conduct a monthly visible emissions observation (VEO) of the Tailing Impoundment by a certified Method 9 observer.

[A.A.C. R18-2-306.A.3.c]
- e. Any changes to the dust management strategies implemented under XI.A.1.b.(7).(b) shall be recorded, and a notification shall be sent to the Director within 10 days following the change.

[A.A.C. R18-2-306.A.3.c]
- f. Bi-weekly Monitoring Requirement
 - (1) Within 180 days of issuance of this permit, Permittee shall submit a visual observation plan to be approved by the Department. The observation plan shall identify a central lookout station or multiple observation points, as appropriate, from where the non point sources shall be monitored. When multiple observation points are used, all the non point sources associated with each observation point shall be specifically identified within the observation plan.
 - (2) The certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of visible emissions from the non-point sources when they are in

operation in accordance with the observation plan. Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

- (3) If the observer sees a plume from a non-point source that on an instantaneous basis appears to exceed 40%, then the observer, shall if practicable, take a six-minute Method 9 observation of the plume.
- (4) If the six-minute opacity of the plume is less than 40%, then the observer shall make a record of the following:
 - (a) Location, date, and time of the observation; and
 - (b) The results of the Method 9 observation.
- (5) If the six-minute opacity of the plume exceeds 40%, then Permittee shall do the following:
 - (a) Adjust or repair the controls or equipment to reduce opacity to below 40%; and
 - (b) Report it as an excess emission under Section XI.A of Attachment "A".
- (6) Any changes to the observation plan, originally approved by the Department, shall be made only with the prior approval of the Director.

[A.A.C. R18-2-306.A.3.c]

B. Open Burning

[A.A.C. R18-2-602]

1. Emission Limitations/Standards

Except as provided in A.A.C. R18-2-602.C(1), C(3), and C(4), and except when permitted to do so by either ADEQ or the local officer delegated the authority for issuance of open burning permits Permittee shall not conduct open burning.

2. Monitoring, Recordkeeping, and Reporting Requirements

Permittee shall maintain copies of all open burning permits readily available for inspection on file.

C. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-602, A.A.C. R18-2-604(A), A.A.C. R18-2-612, A.A.C. R18-2-605, A.A.C. R18-2-606, A.A.C. R18-2-607, A.A.C. R18-2-608, and A.A.C. R18-2-804(B), for the activities subject to this Part.

[A.A.C. R18-2-325]

XII. Requirements for Other Periodic Activities

A. Abrasive Blasting

1. Visible Emissions

- a. Permittee shall not cause, allow or permit visible emissions from sandblasting or other

abrasive blasting operations in excess of 40 percent opacity as measured by EPA Reference Method 9. [A.A.C. R18-2-702.B]

- b. Permittee shall not cause or allow sandblasting or other abrasive blasting without minimizing dust emissions to the atmosphere through the use of good modern practices. Good modern practices include:

- (1) wet blasting;
- (2) effective enclosures with necessary dust collecting equipment;
- (3) use of slag products; or
- (4) any other method as approved by the Director.

[A.A.C. R18-2-726]

2. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

- a. Each time an abrasive blasting project is conducted, Permittee shall log in ink or in an unchangeable electronic format, a record of the following:

- (1) The date the project was conducted;
- (2) The duration of the project; and
- (3) Type of control measures employed.

- b. In lieu of condition XII.A.2.a, Permittee may maintain a section called "Abrasive Blasting Plan" within the Non-Point Source Monitoring Plan referenced in Condition XI.A.1.b.(2), (a) through (c).

B. Spray Painting Operations

1. Opacity Standards

Visible emissions from spray painting operations shall not have an opacity greater than 40 percent, measured in accordance with by EPA Reference Method 9. [A.A.C. R18-2-702.B]

2. Volatile Organic Compounds

a. Emission Limitations/Standards

While performing spray painting operations Permittee shall comply with the following requirements:

- (1) Permittee shall not conduct any spray painting operation without minimizing organic solvent emissions. Such operations other than architectural coating and spot painting, shall be conducted in an enclosed area equipped with controls containing no less than 96 percent of the overspray. [A.A.C. R18-2-727.A]
- (2) Permittee shall not either:
 - (a) Employ, apply, evaporate or dry any architectural coating containing photochemically reactive solvents for industrial or commercial purposes; or
 - (b) Thin or dilute any architectural coating with a photochemically reactive solvent. [A.A.C. R18-2-727.B]

- (3) For the purposes of parts (2) and (5) of this condition, a photochemically reactive solvent shall be any solvent with an aggregate of more than 20 percent of its total

volume composed of the chemical compounds classified in paragraphs (a) through (c) of this subsection, or which exceeds any of the following percentage composition limitations, referred to the total volume of solvent:

- (a) A combination of the following types of compounds having an olefinic or cyclo-olefinic type of unsaturation - hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones : five percent
 - (b) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: eight percent
 - (c) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent [A.A.C. R18-2-727.C]
- (4) Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the groups or organic compounds described in subsection c(1) through c(3) of this condition, it shall be considered to be a member of the group having the least allowable percent of the total volume of solvents. [A.A.C. R18-2-727.D]
- (5) Permittee shall not dispose by evaporation more than 1.5 gallons of photochemically reactive solvent in any one day. [SIP Provision R9-3-527.C]

b. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A3.c]

- (1) Each time a spray painting project is conducted, Permittee shall log in ink or in an unchangeable electronic format, a record of the following:
- (a) The date the project was conducted;
 - (b) The duration of the project;
 - (c) Type of control measures employed; and
 - (d) The location of Material Safety Data Sheets for all paints and solvents used in the project.
- (2) In lieu of Condition XII.b.2.b.(1), Permittee may maintain a section called "Spray Painting Plan" within the Non-Point Source Monitoring Plan referenced in Condition XI.A.1.b.(2), (a) through (c).
- (3) Architectural coating and spot painting projects shall be exempt from the recordkeeping requirements of part (1) above.

C. Mobile Sources

1. The requirements of this condition are applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or are agricultural equipment used in normal farm operations. Mobile sources shall not include portable sources as defined in A.A.C. R18-2-101.84. [A.A.C. R18-2-801]
2. Emission Limitations/Standards for Roadway and Site Cleaning Machinery

Permittee shall not cause, allow or permit to be emitted into the atmosphere from any roadway

and site cleaning machinery smoke or dust for any period greater than ten consecutive seconds, the opacity of which exceeds 40 percent. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes.

[A.A.C. R18-2-804.A]

D. Demolition/Renovation

1. Emission Limitations/Standards

Permittee shall comply with the applicable requirements of 40 CFR 61, Subpart M (National Emissions Standards for Hazardous Air Pollutants - Asbestos).

[A.A.C. R18-2-1101.A.8]

2. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

Permittee shall keep all required records in a file. The required records include the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.

E. Nonvehicle Air Conditioner Maintenance and/or Services

1. Emission Limitations/Standards

Permittee shall comply with the applicable requirements of 40 CFR 82 - Subpart F (Protection of Stratospheric Ozone - Recycling and Emissions Reduction).

[40 CFR 82, Subpart F]

2. Monitoring, Recordkeeping, and Reporting Requirements

[A.A.C. R18-2-306.A.3.c]

Permittee shall keep all records required by the applicable requirements of 40 CFR 82 - Subpart F in a file.

F. Permit Shield

Compliance with this Part shall be deemed compliance with A.A.C. R18-2-726, A.A.C. A.A.C. R18-2-702(B), A.A.C. R18-2-727(A) through (c), Arizona SIP Rule R9-3-527(c), A.A.C. R18-2-801, A.A.C. R18-2-804(A), A.A.C. R18-2-1101(A)(8), and 40 CFR 82 Subpart F, for the activities subject to this Part.

[A.A.C. R18-2-325]

ATTACHMENT "C": EQUIPMENT LIST

AIR QUALITY CONTROL PERMIT NO. M190699P2-99

FOR

PHELPS DODGE SIERRITA INCORPORATED

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
SECTION I: Mining Operations (Equipment in Permit Section A)						
088	Drilling Operations			N	N	
089	Ammonium Nitrate Storage			N	N	
066	Blasting Operations			N	N	
097	Haul Truck Loading and Dumping			N	N	
077	Unpaved Roads (including Ore Hauling)			N	N	
SECTION II: Primary Crushing (Equipment in Permit Section B)						
113	6A & 6B Primary Crushers					
	Primary Crusher 6A	5000 tph	1996	Y	N	Svedala Mark II
	Primary Crusher 6B	5000 tph	1996	Y	N	Svedala Mark II
	Wet Scrubber	40,000 acfm		Y	N	Ducon UW-4, III, size 144, SI 2303221
101	Twin Buttes Primary Crusher					
	Primary Crusher	5000 tph	1975	N	N	Nordberg 54" Gyratory Crusher
	Wet Scrubber	27,000 acfm		N	N	Rotoclone R, size 7, SI 34051510
SECTION III: Overland Ore Conveyor (Equipment in Permit Section C)						
095	Sierrita A2 to A3 Conveyor Transfer (1 point)		1976	N	Y	

PHELPS DODGE SIERRITA - PERMIT NO. M190699P2-99

JUNE 17, 2002

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
072	A3 Stacker to Sierrita Coarse Ore Stockpile		1968	N	Y	
069	Sierrita B2 to B3 Conveyor (1 point)		1976, 1981	N	Y	
096	Sierrita B3 Conveyor to B4 Stacker Transfer (1 point)		1967, 1981	N	Y	
102	B4 Stacker to Sierrita Coarse Ore Stockpile		1967	N	Y	Stephen-Adamson 60"
068	Sierrita Overland, 02, 03, 04, 05, 06 Conveyors (6 points)		1976	N	Y	
070	Portable Primary Crusher Conveyor Transfers (2 points)		1976	N	Y	
071	Esperanza #8 and #9 Conveyor Transfers (3 points)		1957	N	Y	
103	Twin Buttes Belts A-D (5 points)		1975	N	Y	
106	Stacker to Twin Buttes Coarse Ore Stockpile		1975	N	Y	MX Stacker
SECTION IV - FINE ORE CRUSHING - SECONDARY AND TERTIARY CRUSHING (REQUIREMENTS IN PERMIT SECTION III)						
075	Sierrita Secondary Scalping Screens					
	Four (4) Secondary Scalping Screens		2000	Y	N	Svedala 10' x 20' DD
	#10 Wet Scrubber - Sierrita Secondary Scalping Screens	25,000 acfm		Y	N	Ducon UW-4, III, size 102, SI 402652010
	Sierrita Secondary Crushing Building					
	Eight (8) Coarse Ore Reclaim Feeders	12,000 tph	1968	N	N	Stephen-Adamson 48" apron feeders
	Four (4) Coarse Ore Reclaim Belts	8000 tph	1968	N	N	

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
002	Four (4) Secondary Crushers	7200 tph	ND*	ND*	N	Allis-Chalmers 1384 EHD Hydrocone Crushers
	Four (4) Secondary Discharge Screens		ND*	ND*	N	Allis Mineral Systems 8'x16'
	Tertiary Feed Bin		1968	N	N	
	Ten (10) Tertiary Crusher Feed Belts		1968	N	N	
	Nine (9) Tertiary Crushers	5200 tph	ND*	ND*	N	Allis-Chalmers 384 Hydrocone Tertiary Crushers
	Nine (9) Tertiary Discharge Screens		1968	N	N	
	7A Conveyor		ND*	ND*	N	
	7B Conveyor		1968	N	N	
	7C Conveyor		1968	N	N	
	8A Conveyor		1968	N	N	
	8D Conveyor		1968	N	N	
	8B Conveyor		1968	N	N	
002	#1 Wet Scrubber - Sierrita Secondary Crushing Building	58,000 acfm	ND*	ND*	N	Ducon UW-4, III, size 144, SI 402652001
003	#2 Wet Scrubber - Sierrita Secondary Crushing Building	58,000 acfm	ND*	ND*	N	Ducon UW-4, III, size 144, SI 402652002
004	#3 Wet Scrubber - Sierrita Secondary Crushing Building	58,000 acfm	ND*	ND*	N	Ducon UW-4, III, size 144, SI 402652003

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
005	#4 Wet Scrubber - Sierrita Secondary Crushing Building	58,000 acfm	ND*	ND*	N	Ducon UW-4, III, size 144, SI 402652004
006	#5 Wet Scrubber - Sierrita Secondary Crushing Building	58,000 acfm	ND*	ND*	N	Ducon UW-4, III, size 144, SI 402652005
007	#7 Wet Scrubber - Sierrita Secondary Crushing Building	58,000 acfm	ND*	ND*	N	Ducon UW-4, III, size 144, SI 402652007
008	Fine Ore Transfer Building					
	7B to 7C Conveyor Transfer Point (1 point)	6000 tph	1968	N	N	
	#6 Wet Scrubber	12,000 acfm		N	N	Ducon UW-4, III, size 66, SI 402652006
074	Sierrita 7A Bin (including feeder belts and transfer points), 2 Screens and Transfer Point					
	7A Surge Bin		1993	Y	N	
	Two (2) Screens		1990	Y	N	Boliden Allis 8'x16' DD
	EC-2 to 8B Conveyor Transfer (1 point)		1968	N	N	
	#8 Wet Scrubber	25,500 acfm		Y	N	Ducon UW-4, III, size 144, SI 402652008
	2 H8000 Tertiary Crushers, 2 Screens & Transfer Point					
	#11 Tertiary Crusher	1000 tph	1999	Y	N	Svedala Hydrocone H8000
	E16 to EC1 Conveyor Transfer Point (1 point)		1995	Y	N	

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
112	Two (2) Screens		1995	Y	N	Allis Minerals Systems 8'x16'
	#6 Tertiary Crusher	1000 tph	2000	Y	N	Svedala Hydrocone H8000
	#6 Associated Discharge Screen		2000	Y	N	Svedala 10' x 20'
	#9 Wet Scrubber	57,000 acfm		Y	N	Ducon UW-4, III, size 144, SI 4026490
SECTION 11: FINE ORE BIN AND BAGHOUSE EQUIPMENT (PERMIT SECTION 11)						
116	Sierrita 8B to 8C Conveyor Transfer					
	Conveyor Transfer Point		1968	N	N	
	Wet Scrubber - 8B to 8C Conveyor Transfer	8000 acfm		N	N	Ducon UW-4, IV size 54, SI 402 652010
009	Sierrita Fine Ore Bin					
	Fine Ore Bin	70,000 tons	1968	N	N	
	#1 Baghouse - Sierrita Fine Ore Bin	4500 acfm		N	N	Mikro Pulsaire 64-8-20, SI 26530-1
	#2 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Mikro Pulsaire 36S-8-30, SI 26530-6
	#3 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Mikro Pulsaire 36S-8-30, SI 26530-8
	#4 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Mikro Pulsaire 36S-8-30, SI 26530-4
	#5 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Mikro Pulsaire 36S-8-30, SI 26530-3

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
014	#6 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Mikro Pulsaire 36S-8-30, SI 26530-2
015	#7 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Mikro Pulsaire 36S-8-30, SI 26530-5
016	#8 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Mikro Pulsaire 36S-8-30, SI 26530-7
017	#9 Baghouse - Sierrita Fine Ore Bin	3000 acfm		N	N	Mikro Pulsaire 36S-8-30, SI 26530-9
	#0-#15 Mill Feed Belt System					
	#0 Fine Ore Feeder Belts (3ea.)		1970	N	N	SI 503342000-1-2-3
	# 0 Mill Collector Belt		1970	N	N	SI 501912000
018	# 0 Mill Feed Conveyor		1970	N	N	SI 501913000
	# 0 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654000
	# 1 Fine Ore Feeder Belts (3 ea.)		1968	N	N	SI 503342001 - 1 - 2 - 3
	# 1 Mill Collector Belt		1968	N	N	SI 501912001
	# 1 Mill Feed Conveyor		1968	N	N	SI 501913001
019	# 1 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654001
	# 2 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342002 - 1 - 2 - 3 - 4
	# 2 Mill Collector Belt		1968	N	N	SI 501912002

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
020	# 2 Mill Feed Conveyor		1968	N	N	SI 501913002
	# 2 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654002
	# 3 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342003 - 1 - 2 - 3 - 4
	# 3 Mill Collector Belt		1968	N	N	SI 501912003
	# 3 Mill Feed Conveyor		1968	N	N	SI 501913003
021	# 3 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654003
	# 4 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342004 - 1 - 2 - 3 - 4
	# 4 Mill Collector Belt		1968	N	N	SI 501912004
	# 4 Mill Feed Conveyor		1968	N	N	SI 501913004
	# 4 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654004
022	# 5 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342005 - 1 - 2 - 3 - 4
	# 5 Mill Collector Belt		1968	N	N	SI 501912005
	# 5 Mill Feed Conveyor		1968	N	N	SI 501913005
	# 5 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654005
023						

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
024	# 6 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342006 - 1 - 2 - 3 - 4
	# 6 Mill Collector Belt		1968	N	N	SI 501912006
	# 6 Mill Feed Conveyor		1968	N	N	SI 501913006
	# 6 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654006
	# 7 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342007 - 1 - 2 - 3 - 4
	# 7 Mill Collector Belt		1968	N	N	SI 501912007
	# 7 Mill Feed Conveyor		1968	N	N	SI 501913007
025	# 7 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654007
	# 8 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342008 - 1 - 2 - 3 - 4
	# 8 Mill Collector Belt		1968	N	N	SI 501912008
	# 8 Mill Feed Conveyor		1968	N	N	SI 501913008
	# 8 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654008
	# 9 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342009 - 1 - 2 - 3 - 4
	# 9 Mill Collector Belt		1968	N	N	SI 501912009
026	# 9 Mill Feed Conveyor		1968	N	N	SI 501913009

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
027	# 9 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654009
	# 10 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342010 - 1 - 2 - 3 - 4
	# 10 Mill Collector Belt		1968	N	N	SI 501912010
	# 10 Mill Feed Conveyor		1968	N	N	SI 501913010
028	# 10 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654010
	# 11 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342011 - 1 - 2 - 3 - 4
	# 11 Mill Collector Belt		1968	N	N	SI 501912011
	# 11 Mill Feed Conveyor		1968	N	N	SI 501913011
029	# 11 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654011
	# 12 Fine Ore Feeder Belts (4 ea.)		1968	N	N	SI 503342012 - 1 - 2 - 3 - 4
	# 12 Mill Collector Belt		1968	N	N	SI 501912012
	# 12 Mill Feed Conveyor		1968	N	N	SI 501913012
030	# 12 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654012
	# 13 Fine Ore Feeder Belts (3 ea.)		1968	N	N	SI 503342013 - 1 - 2 - 3

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
031	# 13 Mill Collector Belt		1968	N	N	SI 501912013
	# 13 Mill Feed Conveyor		1968	N	N	SI 501913013
	# 13 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654013
	# 14 Fine Ore Feeder Belts (3 ea.)		1968	N	N	SI 503342014 - 1 - 2 - 3
	# 14 Mill Collector Belt		1968	N	N	SI 501912014
032	# 14 Mill Feed Conveyor		1968	N	N	SI 501913014
	# 14 Wet Scrubber - Sierrita Mill Building	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654014
	# 15 Fine Ore Feeder Belts (3 ea.)		1970	N	N	SI 503342015 - 1 - 2 - 3
	# 15 Mill Collector Belt		1970	N	N	SI 501912015
	# 15 Mill Feed Conveyor		1970	N	N	SI 501913015
033	#15 Wet Scrubber - Mill Feed Belt System	10,000 acfm		N	N	Ducon UW-4, III, size 60, SI 502654015
063	Lime Unloading & Handling System (Requirements in permit section VII)					
	Lime Unloading & Handling Processes	10 tph	1968	N	N	
	Wet Scrubber	6400 acfm		N	N	Ducon UW-4, III, size 48, SI 1502674001
073	Copper/Moly Concentrate Storage Areas		1957, 1968	N	N	

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
Section III: Molybdenum Plant (Molybdenum Processing)						
041	Unleached Molybdenum Sulfide Dryers					
	Three (3) Dryers	ND*	ND*	N/A		Holoflite Type 2D-1620-6 Dryers
	Wet Scrubber - Unleached Moly Sulfide Dryers	6400 acfm		N/A		Ducon UW-4X, III, size 48, SI 16062140
042	Leach & Unleach Moly Sulfide Storage, Screening and Handling					
	Leach & Unleach Moly Sulfide Storage, Screening and Handling	60 tph	1969-1994	N/A	Y	
	Moly Sulfide Baghouse	6000 acfm		N/A	N	Mikro Pulsaire 81S-10-20, SI 16026630
044	Moly Sulfide Dump Hopper		1990	N/A	Y	
045	Moly Sulfide Screw Conveyor Loadout		1995	N/A	Y	
117	Moly Sulfide Screw Conveyor Loadout #2		2001	N/A	Y	
048	Moly Oxide Storage, Screening and Handling					
	Moly Oxide Storage, Screening and Handling	12 tph	1968	N/A	Y	
	Moly Oxide Baghouse	4200 acfm	1968	N/A	N	Mikro Pulsaire 56S-10-20, SI 16026600
053	Leached Moly Sulfide Dryers					
	Three (3) Sets of Dryers	22.5 tph	1968	N/A	N	Holoflite Type 2D-1620-6 Dryers
	#1 Wet Scrubber - Moly Leach Dryers	6400 acfm	1968	N/A	N	Ducon UW-4X, III, size 48, SI 160613001

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
054	#2 Wet Scrubber - Moly Leach Dryers	6400 acfm	1968	N/A	N	Ducon UW-4X, III, size 48, SI 160613002
059	Moly Packaging & Handling System					
	Moly Packaging Processes		1968	N/A	Y	
	Cannery Baghouse	12,000 acfm	1968	N/A	N	Wheelabrator 168DW, 28RW32, SI 6526615
056	Molybdenum Roasting - Maintenance Stack					
	Two (2) #1 and #2 Molybdenum Roaster		1968	N/A	N	Skinner Multiple Hearth Roaster
	Two (2) Cyclones	52,300 acfm	1968	N/A	N	Buell Eng. 4BAR #50 Series 43
	Two (2) Electrostatic Precipitators	52,300 acfm	1968	N/A	N	Western Precipitation Div.
	Maintenance Stack			N/A	N	
	Molybdenum Roasting - Main Stack					
	Two (2) #1 and #2 Molybdenum Roaster		1968	N/A	N	Skinner Multiple Hearth Roaster
	Two (2) Cyclones	52,300 acfm	1968	N/A	N	Buell Eng. 4BAR #50 Series 43
	Two (2) Electrostatic Precipitators	52,300 acfm	1968	N/A	N	Western Precipitation Div.
	Two (2) Lime Slurry Scrubbers	46,900 acfm	1968	N/A	N	UOP Model 500TCA, SI 60621101

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
058 118 119	Two (2) Brinks Mist Eliminator System	45,000 acfm	1975	N/A	N	Monsanto Enviro-Chem System, Brinks
	Main Roaster Stack			N/A	N	
	Molybdenum Leach Plant			N/A	N	
	Rhenium Recovery Operation			N/A	N	
046	Two (2) Raw Materials Storage Bins		1975	N	Y	
	Two (2) Fabric Filter Bin Vents		1975	N	N	Carter Day
062	Natural Gas Heaters and Boilers				N	
	Boiler - Moly Leach Heating (Primary)	8.3 MMBtu/hr	1960	N	N	Parker Model 150
	NG Heater - Moly Dryer Oil Heating System 2	6.3 MMBtu/hr	1968	N	N	American Hydrotherm Model 500
	NG Heater - Moly Dryer Oil Heating System 1	6.3 MMBtu/hr	1968	N	N	American Hydrotherm Model 500
	Rhenium Plant Water Heater	1.2 MMBtu/hr	1997	N	N	Parker Model WH1210
	Change Room Boiler	2.0 MMBtu/hr		N	N	Parker Model
	SX Electrolyte Heater	2.6 MMBtu/hr	1979	N	N	Parker Model
	Moly Leach Heating (Standby)	25 MMBtu/hr	pre-1970	N	N	Cleaver Brooks CV-760700
	EW Electrolyte Heater	10 MMBtu/hr	1955	N	N	Cyclotherm Model C-10500

ID	EQUIPMENT NAME	RATED CAPACITY	YEAR	NSPS	MATERIAL HANDLING FACILITY	MAKE, MODEL AND/OR SN
	Moly Autoclave Boiler	2.0 MMBtu/hr	pre-1980	N	N	
	EW Cathode Wash Heater	3.0 MMBtu/hr	1993	N	N	Parker Model
	Moly Briquette Heater	3.5 MMBtu/hr	1989	N	N	Maxon Oven Pack
	Mine Truck Shop Wash Heater	1.0 MMBtu/hr	1968	N	N	Alkota Model 301
	Miscellaneous fuel-burning equipment fired at a sustained rate of less than 1 million BTU/hr	< 1 MMBtu/hr			N	
SECTION VIII: MISCELLANEOUS AND FUEL-BURNING EMISSION SOURCES						
076	Organic Storage Tanks - SX #1, #2, #3 (REQUIREMENTS IN PERMIT SECTION IX)			N	N	
078	Gasoline Storage Tanks (REQUIREMENTS IN PERMIT SECTION X)	12,000 gal/each	1990	N	N	Tanks ML-11(1), ML-11(2), SP-13
087	Sierrita Tailing Impoundment (REQUIREMENTS IN PERMIT SECTION XI)	2810 acres		N	N	
093	Road Rock Crushing & Screening Plant (REQUIREMENTS IN PERMIT SECTION VIII)	400 tph	1966	N	N	Cedarapids/El Jay RC454 STD Cone Crusher
105	Twin Buttes Electrowinning Tankhouse (REQUIREMENTS IN PERMIT SECTION IX)	144 cells	1975	N	N	
120	Miscellaneous Screens and Grizzlies			N	N	

ND* These pieces of equipment are subject to ongoing negotiations pursuant to Findings and Notices of Violation Docket Numbers, R-9-98-1 (Oct. 1, 1997), R9-00-25 (Sept. 6, 2000), and R9-01-17 (Aug. 13, 2001).

**APPENDIX 5: APPLICATION FOR A SIGNIFICANT PERMIT REVISION
TO THE EXISTING TITLE V PERMIT**

This Appendix 5 of the Consent Decree is in the form of amendments to the terms and conditions of the Existing Title V Permit (attached to the Consent Decree as Appendix 4), with additions to permit language in double underline (except that the formula in Section V.B.4.a.(1) and the summary report form in Section V.B.4.d.(3).(c) below, which are additions to the permit language, are not shown in double underlined); deletions to permit language in ~~strikeout~~; and ellipses ("....") indicating that the Existing Title V Permit language for the corresponding subheading remains unchanged. While Phelps Dodge is required to submit one or more applications for permit revisions to the Existing Title V Permit that, taken together, include all of the terms and conditions of this Appendix 5, nothing herein shall be construed as limiting ADEQ's authority to process the ensuing application(s) for permit revisions pursuant to the applicable rules and regulations of A.A.C. Title 18, Chapter 2, or as limiting ADEQ's authority to issue the resulting permit revisions the content or form of which may differ from this Appendix 5. If the resulting permit revisions issued by ADEQ fail to meet the criteria for termination of the Consent Decree as set forth in Paragraph 54.c of the Consent Decree (i.e., the permit revisions do not include federally-enforceable terms and conditions that are at least as stringent as all of the terms and conditions included in this Appendix 5), then the Consent Decree shall remain effective until Phelps Dodge receives a Final Revised Permit that meets the criteria for termination of the Consent Decree and until Phelps Dodge meets all other conditions for termination as set forth in Section XV of the Consent Decree.

EXISTING TITLE V PERMIT, ATTACHMENT B

Section I.G is amended by adding the Molybdenum Roaster Maintenance Stack to the list of equipment that has been shutdown permanently:

<i>EQUIPMENT</i>	<i>SOURCE ID</i>
....
<i>Molybdenum Roaster - Maintenance Stack</i>	
<i>SHUTDOWN</i>	<i>056</i>

Section II is to be amended to include particulate matter BACT requirements for the Dual Primary Crusher, as determined by the permit issuing authority. Such requirements may include compliance schedules.

Section II.E (Permit Shield) is amended as follows, except that the added language is optional:

~~1. Except as provided in Section H.E.2 below, c~~ Compliance with conditions of Section II shall be deemed compliance with Arizona SIP Rule R9-3-521(A)(2)(b), A.A.C. R18-2-721(B) and (F), A.A.C. R18-2-702(B) and (c), 40 CFR 60.382(a)(1), (a)(2), and (b), 40 CFR 60.384(a) and (b), 40 CFR 60.385(b) through (d), 40 CFR 60.386(c), 40 CFR 60.11(d), and Permit No. 1214,

Attachment "A", Conditions 2, 3 and 4, for the equipment subject to Section II. In addition compliance with conditions of Section II shall be deemed compliance with Arizona SIP Rules R9-3-301, R9-3-304, and R9-3-305 for Source ID 113 with respect to the 1996 construction of Primary Crusher 6A and the 1996 reconstruction of Primary Crusher 6B. [A.A.C. R18-2-325]

2. ~~With regard to Source ID 113 (6A & 6B Primary Crushers), there are unresolved applicability issues, which are the subject of Findings and Notices of Violation, Docket Nos. R9-98-1, R9-00-25, and R9-01-17. The permit at this time neither addresses nor shields the Permittee from enforcement actions related to the applicability of State SIP R9-3-301, R9-3-304, R9-3-305, and R9-3-306 to Source ID 113.~~

Section III is amended as follows:

III. REQUIREMENTS FOR THE SECONDARY AND TERTIARY CRUSHING CIRCUITS

~~The applicability of NSPS to equipment marked with an "ND" in the NSPS column of Section IV of Attachment C is unresolved. Subject to Section III.E below, the Director has determined that the provisions of Section III are "State Enforceable Requirements" for the equipment marked with an "ND" in the "NSPS" column of Section IV of Attachment C.~~

A. ~~Equipment Marked "N" or "ND" in the NSPS Column of Attachment C~~ A. ~~Non-New Source Performance Standards (Non-NSPS) Affected Facilities~~

Affected Facilities subject to Standards of Performance for Existing Nonferrous Metals Industry Sources include all equipment marked with an "N" in the NSPS column of Section IV of Attachment C of this permit. All such equipment shall comply with the following:

1. Emission Limits and Standards

a. ~~Particulate Matter Standard for Equipment Marked with "N" in the NSPS Column of Attachment C~~

- (1)
(2)

b. ~~State Enforceable Particulate Matter Standard for Equipment Marked with "ND" in the NSPS Column of Attachment C~~ [A.A.C. R18-2-721.B] [State Enforceable Only]

~~Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:~~

~~For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:~~

$$E = 4.10P^{0.07}$$

~~For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:~~

$$E = 55.0P^{0.77} - 40$$

~~Where E and P are defined as indicated in paragraph III.A.1.a above.~~

c. ~~Visible Emissions - Opacity Standard~~ [A.A.C. R18-2-702.B, and -702.C]

~~This standard is federally enforceable for equipment marked with "N" and state enforceable only for equipment marked "ND" in the NSPS column in Attachment C.~~

(1)

(2)

2. **Monitoring, Recordkeeping, and Reporting Requirements**

~~These requirements are federally enforceable for equipment marked with "N" and state enforceable only for equipment marked "ND" in the NSPS column in Attachment C.~~

a.

b.

c.

B.

C. Performance Testing Requirements

[A.A.C. R18-2-306.A.3.c and R18-2-312]

1. Permittee shall conduct particulate matter performance tests on the metallic mineral mining units subject to the requirements of Section III in accordance with the following schedule, beginning the first year of permit issuance:

~~Collect one representative sample from two of the following wet scrubber Source IDs 002, 003, 004, 005, 006, or 007 (State enforceable only). The first 365 day period following permit issuance~~

Source ID 074: The second 365 day period following permit issuance

Source ID 112: The third 365 day period following permit issuance

Source ID 075: Once during permit term

Source ID 008: Once during permit term

Source IDs 002-007: Once during permit term

These performance tests shall be conducted in accordance with Reference Method 5 or 17 in 40 CFR 60, Appendix A.

2. The following shall be applicable for Source ID's 002-007, 074, 075 and 112:

a.

b.

3. The following shall be applicable for Source IDs ~~002-007 (State Enforceable Only)~~, ~~075~~, 008:

a.

b.

4.

D. Air Pollution Control Requirements

1. For Equipment Marked "N" ~~or "ND"~~ in the NSPS column of Attachment C:

....

2.

3.

E. Permit Shield

1. ~~Except as provided in Section III.E.2 below, c~~ Compliance with conditions of Section III shall be deemed compliance with Arizona SIP Rule R9-3-521(A)(2)(b), A.A.C. R18-2-721(B) and (F), A.A.C. R18-2-702(B) and (c), 40 CFR 60.382(a)(1), (a)(2), and (b), 40 CFR 60.384(a) and (b), 40 CFR 60.385(b) through (d), 40 CFR 60.386(c), and 40 CFR 60.11(d), for the equipment subject to Section III. [A.A.C. R18-2-325]
2. ~~With regard to the equipment marked with an "ND" in the "NSPS" column of Section IV of Attachment C ("ND Sources"), there are unresolved NSPS applicability issues, which are the subject of Findings and Notices of Violation Docket Nos. R9-98-1, R9-00-25, and R9-01-17. The permit at this time neither addresses nor shields the Permittee from enforcement actions related to the applicability of 40 CFR Part 60, Subparts A and LL to the ND sources. Nothing in the permit precludes assertions that the requirements of 40 CFR 60, Subparts A and LL currently apply to the ND sources. The Director's determination that the provisions of Section III are "State Enforceable Requirements" for the ND sources in no way implies that such equipment have been determined to be "existing sources", as that term is defined in State SIP R9-3-101 or A.A.C. R18-2-101.~~

Section V is amended as follows:

V. REQUIREMENTS FOR THE MOLYBDENUM PLANT

~~Except for Source ID 041, Affected Facilities subject to the Standards of Performance for Existing Nonferrous Metals Industry Sources include all equipment marked with an "N" or "N/A" in the "NSPS" column of Section VI of Attachment C of this permit. Source ID 041 shall comply with the requirements of Section V (except for Section V.A.1.a), such requirements being "State Enforceable Requirements" as to Source ID 041 only. All others such~~ equipment shall comply with the following:

A. Emission Limits and Standards

1. Particulate Matter Standard [State SIP R9-3-521.A.2.a and -b]
 - a. Standard Applicable Until A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County; ~~except for Source ID 041~~

....
 - b. Standard Applicable On and After the Date A.A.C. R18-2-721.B Is Approved as Part of the State Implementation Plan for Pima County; ~~except for Source ID 041~~

....
 - c. ~~The following shall apply to Source ID 041~~

~~Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere from any of the equipment in any one hour in total quantities in excess of the amount calculated by the following equation:~~

~~For Process Sources Having Process Weight Rates of 30 Tons per Hour or Less:~~

$$E = 4.10P^{0.07}$$

~~For Process Sources Having a Process Weight Rate Greater than 30 Tons per Hour:~~

$$E = 55.0P^{0.77} - 40$$

*Where E and P are defined as indicated in paragraph V.A.1.a above:
[A.A.C. R18-2-721.B]*

2.

3.

4. Molybdenum Roasting [State SIP R9-3-312 and -521.C.2]

a. Regardless of any previous determinations by the Director or the Administrator, each emission limit or standard of this Section V.A shall apply to the molybdenum roasting operations (which includes Source IDs 058, 118, and 119) at all times and at all points of molybdenum roasting emissions discharge.

b. Compliance Determination for the Particulate Matter Standard.

Compliance with the particulate matter standard in Section V.A.1 shall be determined by either:

(1) Conducting a performance test on the molybdenum roaster(s) in accordance with the test methods and procedures of Attachment A, Section XVIII and Attachment B, Section V.C; or

(2) Any credible evidence or information relevant to whether a molybdenum roaster would have been in compliance with the particulate matter standard if the performance test referred to in Section V.A.4.b.(1) above had been performed.

c. Compliance Determination for the Reduced Sulfur Standard.

(1) With the exception of the molybdenum roaster operating condition referred to in Section V.A.4.c.(2) below, the reduced sulfur standard in Section V.A.3 above applies to each individual molybdenum roaster separately (i.e., Permittee shall not discharge into the atmosphere from No. 1 Molybdenum Roaster reduced sulfur in excess of ten percent of the sulfur entering No. 1 Molybdenum Roaster as feed, and Permittee shall not discharge into the atmosphere from No. 2 Molybdenum Roaster reduced sulfur in excess of ten percent of the sulfur entering No. 2 Molybdenum Roaster as feed).

(2) If, during any period, all of the off-gas from one molybdenum roaster combine with all of the off-gas from the other molybdenum roaster before being released into the atmosphere through the main stack, then the reduced sulfur standard in Section V.A.3 above applies to the molybdenum roasters jointly for that period only (i.e., Permittee shall not discharge into the atmosphere from Nos. 1 and 2 Molybdenum Roasters through the main stack reduced sulfur in excess of ten percent of the sulfur entering Nos. 1 and 2 Molybdenum Roasters as feed).

(3) Compliance with the reduced sulfur standard in Section V.A.3 above shall be determined by:

(a) Conducting a performance test on the molybdenum roaster(s) in accordance with the test methods and procedures of Attachment A, Section XVIII and Attachment B, Section V.C; or

- (b) Continuous emissions monitoring, as set forth in Section V.B.4 below;
or
- (c) Any credible evidence or information relevant to whether a molybdenum roaster would have been in compliance with the reduced sulfur standard if the performance test in Section V.A.4.c.(3).(a) above had been performed.

B. Monitoring, Recordkeeping, and Reporting Requirement

1.
2.
3.
4. Molybdenum Roasting Sulfur Monitoring, and Recordkeeping, and Reporting Requirements
[A.A.C. R18-2-306.A.3.a,-c,-d and State SIP R9-3-521.C.2]
{State Enforceable Only}

a. Continuous Emissions Monitoring System (CEMS) for SO₂

Permittee shall install, calibrate, maintain, and operate a continuous emissions monitoring system to continuously measure SO₂ emissions from the molybdenum roasters in accordance with the following:

(1) Compliance Determination for the Reduced Sulfur Standard

In addition to Section V.A.4.c.(3).(a) and (c) above, compliance with the reduced sulfur standard in Section V.A.3 above shall be determined for each hour of roaster operations (i.e., each hour in which roasting off-gas is routed to the main stack from any roaster), in accordance with the following equation:

$$SO_2 \text{ percent removed} = 100 \times \left(1 - \left(\frac{SO_2 \text{ Mass Emissions Determination}}{SO_2 \text{ Generation Determination}} \right) \right)$$

$$\text{where: } SO_2 \text{ Mass Emissions Determination} = \frac{\sum_{i=hr1}^{hr=3} (SO_2)_i}{3}$$

where: $(SO_2)_i$ = SO₂ mass emissions for hour i as described in Section II.A.1.b below and at least three hours have elapsed since startup of roaster operations (for the purpose of this and the following equation only, "startup of roaster operations" occurs immediately upon resumption of feed after there has been at least eleven consecutive hours when no feed has entered the roaster).

SO₂ Generation Determination =

$$\frac{\sum_{j=hr1}^{hr=x} (SO_2)_j}{x}$$

where: x = hours of operation since startup of roaster operations and $x \leq 12$ hours.

$$(SO_2)_j = S_{input} \times 2000 \text{ lbs per ton} \times 2 \text{ lbs } SO_2 \text{ per lb } S$$

$$\text{where: } S_{input} = F_{tph} \times (1 - F_{H_2O}) \times S_{percent}$$

F_{tph} = concentrate feed to roaster in tons per hour

F_{H_2O} = percent moisture in concentrate feed to roaster

$S_{percent}$ = percent sulfur in concentrate feed to roaster

An SO_2 percent removed value from the above equation that is less than 90 percent shall constitute a violation of the reduced sulfur standard in Section V.A.3 above and shall be reported as excess emissions as part of the CEMS Excess Emissions and Monitoring System Performance Report referred to in Section V.B.4.d below. Permittee shall use all valid measurements or data points collected to calculate both the SO_2 Generation Determinations and the SO_2 Mass Emissions Determinations.

(a) SO_2 Generation Determination

i) 24-Hour Composite Sampling Percent Sulfur in Feed Determination

- a) Each day the roaster is operating, beginning at approximately 6:00 A.M. and ending between 4:00 A.M. and 6:00 A.M. the following day (the "24-Hour Composite Sampling Period"), Permittee shall collect one roaster feed sample during each consecutive two-hour period (for a total of 12 samples collected for each 24-Hour Composite Sampling Period) from the discharge of the load cell feed bin that is currently feeding the roaster. If there is no roaster feed at 6:00 A.M., sample collection shall begin no later than two hours after feed begins and continue during each two-hour period remaining in the 24-Hour Composite Sampling Period. Although Permittee is required to collect one valid roaster feed sample for each two-hour period, Permittee's failure to do so shall not invalidate any valid samples collected for that same 24-hour period. All collected individual samples, whether one or more, shall be used as the 24-hour composite sample. Until Permittee determines the percent sulfur and percent moisture content in the feed in accordance with the procedures set forth below, or when no valid samples or data exist for a 24-Hour Composite Sampling Period, Permittee shall substitute, as applicable, 24.6 percent sulfur in feed and 10 percent moisture content in feed for that 24-Hour Composite Sampling Period for the sole purpose of calculating the SO_2 Generation Determination, and, if applicable, complying with the reporting requirements of Section

V.B.4.d below and Attachment A, Section XII. The use of substitute data neither relieves nor excuses Permittee from complying with the sample or data collection requirements provided herein.

- b) Permittee shall store the samples in a single sealed compositing container.
 - c) Following collection of the last sample of the 24-Hour Composite Sampling Period, Permittee shall transport the sealed compositing container to a laboratory, where the laboratory shall prepare and analyze the 24-hour composite sample, recording the analysis as percent sulfur in feed on a dry weight basis for the 24-Hour Composite Sampling Period.
 - d) Permittee shall determine the percent sulfur in feed for each 24-Hour Composite Sampling Period within 72 hours of receipt by the on-site Permittee laboratory. If an off-site laboratory is used, the determination shall be made within 10 days of receipt of the sample by the off-site laboratory.
 - e) During multiple roaster operations, Permittee shall duplicate the above procedures (i.e., the 24-hour composite sampling percent sulfur in feed on a dry weight basis shall be determined individually for each roaster).
- ii) 24-Hour Composite Sampling Percent Moisture Content in Feed Determination
- a) Using a portion of the sample collected for the 24-hour composite sampling percent sulfur in feed determination in step i) above, Permittee shall determine the moisture content in the feed for the 24-Hour Composite Sampling Period by laboratory analysis. Such analysis shall be recorded as the percent moisture content in feed for that 24-Hour Composite Sampling Period.
 - b) Permittee shall determine the percent moisture content in feed for each 24-Hour Composite Sampling Period within 72 hours of receipt by the on-site Permittee laboratory. If an off-site laboratory is used, the determination shall be made within 10 days of receipt of the sample by the off-site laboratory.
- iii) Hourly Feed Determination
- a) Permittee shall weigh all feed entering each roaster using load cell feed bins as described in the procedures in Section V.B.4.a.(2) below.

- b) During each clock hour, Permittee shall total and record the feed entering each roaster during the past hour. When no valid data exist for an hourly feed period, Permittee shall substitute feed data from the average of the most recent valid hourly feed periods previous to and subsequent to the missing data period for the sole purpose of calculating the SO₂ Generation Determination, and, if applicable, reporting excess emissions pursuant to Section V.B.4.d below and Attachment A, Section XII. This procedure to substitute feed data shall not be used for periods of missing hourly feed values longer than three hours. When no valid data exist for an hourly feed period, but there exists credible evidence that there was no feed, the hourly feed value is deemed to be zero (0) tons per hour. The use of substitute data neither relieves nor excuses Permittee from complying with the sample or data collection requirements provided herein.
- c) Upon receipt of the percent moisture content in feed determination in step ii) above, Permittee shall correct each hourly wet feed value to a dry feed value using the corresponding 24-hour composite sampling percent moisture content in feed determination.

iv) Hourly SO₂ Generation Determination

Upon receipt of the 24-hour composite sampling percent sulfur in feed determination in step i) above and the hourly dry feed determination in step iii) above, Permittee shall input these determinations and the eleven immediately preceding hourly SO₂ Generation Determinations into the equation in Section V.B.4.a.(1) above to determine compliance with the reduced sulfur standard in Section V.A.3 above.

(b) SO₂ Mass Emissions Determination

- i) Permittee shall measure the concentration of SO₂, volumetric flow rate, and stack temperature in off-gas from the roaster operations by a CEMS on the main stack.
- ii) Permittee shall use data acquired by the CEMS to calculate hourly SO₂ mass emissions. The CEMS shall be operated in accordance with Section V.B.4.a.(3) below. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. All data points required to be collected during an hour shall be, to the extent practicable, evenly spaced over the hour. Permittee shall calculate hourly SO₂ mass emissions measurements, expressed as pounds SO₂ per hour, by totaling each 15-minute period of CEMS mass emissions data for each hour. When no valid data exist for a 15-minute period,

Permittee shall substitute data from the average of the most recent valid 15-minute periods previous to and subsequent to the missing data period for the sole purpose of calculating the SO₂ Mass Emissions Determination, and, if applicable, reporting excess emissions pursuant to Section V.B.4.d below and Attachment A, Section XII. The use of substitute data neither relieves nor excuses Permittee from complying with the sample or data collection requirements provided herein.

- iii) Permittee shall input the current and two immediately preceding hourly SO₂ mass emissions measurements from step ii) above into the equation in Section V.B.4.a.(1) above to determine compliance with the reduced sulfur standard in Section V.A.3 above.

(2) Feed Weight

Permittee shall perform daily inspections of all load cells associated with the four molybdenum roaster feed weigh bins to ensure that the load cells are operating normally. To ensure feed weigh bin accuracy, Permittee shall calibrate the load cell system at least once per calendar year using load cell manufacturer's calibration guidelines. If, during annual calibration, a load cell is found not to meet calibration criteria, Permittee shall undertake corrective action as soon as practicable and verify that the corrective action is successful and that the load weigh bin cells are performing within manufacturer's calibration guidelines. Verification of calibrations and corrective actions shall be performed and documented by a third-party technician, registered with the Arizona Department of Weights and Measures. Documentation shall contain reference to the specific NIST standard used for calibration. Permittee shall ensure that the feed weigh bin load cells, as well as the associated automated data acquisition and handling systems, are operating and monitoring at all times, except during periods of calibration, quality assurance, preventive maintenance, or repair of these systems. Permittee shall not disrupt the feed weigh bin load cells or any portion thereof, and thereby avoid performing the monitoring and recording required by this Section V.B.4. When the feed weigh bin load cell system is unable to obtain valid measurements of feed to the molybdenum roaster(s), the Permittee shall obtain a valid measurement of feed data by manually calibrating the feed screw speed.

(3) CEMS Installation, Calibration, Maintenance, and Operation Requirements and Quality Assurance and Quality Control Procedures

Permittee shall install, calibrate, maintain, and operate, as well as conduct quality assurance and quality control procedures for, a CEMS on the main stack in accordance with the requirements specified below. Permittee shall ensure that the CEMS, as well as the associated automated data acquisition and handling systems, are operating and monitoring at all times, except during periods of system breakdown, calibration, zero and span adjustments, quality assurance, preventive maintenance, or repair of these systems, or after seven consecutive days have elapsed since any feed has entered either roaster. Permittee shall not disrupt the CEMS or any portion thereof, and thereby avoid performing the monitoring and recording required by this Section V.B.4. For each missing CEMS data period, Permittee shall continuously record the pH of

the scrubber slurry underflow during the entire period to ensure proper operation of the scrubber.

(a) CEMS Description

- i) The CEMS shall monitor SO₂, volumetric flow rate, and stack temperature from the outlet of the main stack.
- ii) The output from the SO₂ analyzer, flow monitor, and the temperature sensor will be transmitted directly to a data acquisition system. The system will calculate the mass output of SO₂ from the main stack. The system will be capable of reading all values over the full range of each measurement device. In addition, the data acquisition system will create a record of all required data for storage, review, and reporting. Data from these monitors shall be used to calculate and record pounds of SO₂ emitted for each 15 minute period.
- iii) The system will be equipped to provide daily zero and span checks of both the SO₂ monitor and the flow measurement device.
- iv) SO₂ emissions will be monitored using a continuous SO₂ analyzer. The sample will be drawn from the manifold through the analyzer by a sample pump.
- v) The velocity will be measured in actual feet per second. Volumetric flow will be converted to dry standard cubic feet per minute using the stack diameter, the gas temperature, and any necessary pressure adjustments. Preliminary moisture measurements will be conducted to determine a moisture correction factor B_{ws}. The flow monitoring system may also require developing a polynomial adjustment coefficient (K factor) so that the flow monitor measurements agree with the reference method. The flow monitor will be designed and equipped to allow for a daily calibration error test consisting of at least two reference values: 0% to 20% of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and 50% to 70% of span. Flow monitor response, both before and after any adjustment, will be capable of being recorded by the data acquisition and handling system. The flow monitor will be designed to allow a daily calibration error test of the entire flow monitoring system, from the outlet of the probe tip through and including the data acquisition and handling system, or the flow monitoring system from and including the transducer through and including the data acquisition and handling system.
- vi) Temperature will be measured using a thermocouple mounted in a thermowell installed near the location of the flow monitor. Temperature data will be reduced to 1-minute averages, clock basis.

(b) Routine Operation and Calibration

i) CEMS Daily Checks

Permittee shall inspect the CEMS each day for the correct flow settings for the sample collection system and the dry air supply. Permittee shall inspect the sample collection system for proper operation, check calibration gas supply, review daily zero span results, and complete the CEMS log.

ii) SO₂ Analyzer Daily Checks

Permittee shall inspect the CEMS each day to assess CEMS operation. The assessment shall include checking the daily zero and span of the monitor, reviewing fault alarms, and performing routine maintenance. The CEMS is capable of automatic zero and spans of the SO₂ monitoring system. The low-level calibration standard should be between 0% and 20% of analyzer full scale, and the high-level calibration standard should be between 50% and 70% of analyzer full scale. The absolute difference of the monitor response to the calibration gases must not be greater than 2.5% of the span value of the instrument. If this limit is not met, Permittee shall perform a manual calibration of the system to verify the results of the automatic calibration. Permittee shall verify that there is sufficient gas flow, that there are no leaks in the system, and that the correct cylinder concentration was used. If the system checks all show that the analyzer span or zero has drifted, Permittee shall adjust the analyzer. Permittee shall record all repairs and adjustments in the CEMS log.

iii) Flow Daily Checks

Permittee shall log automatic daily checks of the flow monitor zero and span. Permittee shall perform daily automatic blow back and pluggage checks of the CEMS.

(c) Quality Assurance and Quality Control

i) CEMS Relative Accuracy Test Audit ("RATA")

a) At least once per calendar year, but not less than six months after the initial RA test or the previous RATA, Permittee shall conduct a CEMS RATA. The Administrator and the Director will be notified in writing at least 21 days prior to the initiation of testing.

b) EPA RM test procedures that will be implemented to accomplish the RATA are as follows:

RM 2 "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type-S Pitot Tube)".

RM 4 "Determination of Moisture Content in Stack Gases"; and

RM 6 or 6C "Determination of Sulfur Dioxide Emissions from Stationary Sources" or "Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)", except that under either RM 6 or 6C each test run shall be 15 minutes and coincide with the CEMS 15-minute data points.

c) A minimum of nine acceptable RM tests will be conducted to demonstrate the accuracy of the CEMS at the stack test location. The RA of the SO₂ monitoring system must be no greater than 20% of the mean value of the RM test data or 10% of the applicable standard, whichever is greater, in terms of pounds SO₂ emitted for each 15 minute period.

ii) Initial Performance Test

Permittee shall conduct an initial CEMS performance test. The test will consist of two parts: (i) a 168-hour calibration drift ("CD") test, and (ii) a relative accuracy ("RA") test.

a) A 7-day CD test shall be performed in conjunction with the initial performance test. During the 7-day CD test period the analyzers will operate under normal operating conditions, performing daily zero and span checks, and the roasters will operate under normal operating conditions (i.e., normal feed rates). The daily CD checks will be observed and recorded by the data acquisition system and in a logbook. The data will be documented in the CEMS performance test report. The SO₂ analyzer calibration must not deviate from the reference value of the calibration gas by more than 2.5% of the established span value.

b) The CD test will be considered invalid if one of the daily checks during the 7-day CD test falls outside the limits. Permittee shall check all components of the CEMS for leaks or possible failure, and make any necessary adjustments. The 7-day CD test will be repeated upon completion of all necessary adjustments or repairs.

c) EPA Reference Method ("RM") test procedures that will be implemented to accomplish the RA test are as follows:

RM 2 "Determination of Stack Gas Velocity and

Volumetric Flow Rate (Type-S Pitot Tube)";

RM 4 "Determination of Moisture Content in Stack Gases"; and

RM 6 or 6C "Determination of Sulfur Dioxide Emissions from Stationary Sources" or "Determination of Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)", except that under either RM 6 or 6C each test run shall be 15 minutes and coincide with the CEMS 15-minute data points.

d) A minimum of nine acceptable RM tests will be conducted to demonstrate the accuracy of the CEMS at the stack test location. The RA of the SO₂ monitor system must not be greater than 20% of the mean value of the RM test data or 10% of the applicable standard, whichever is greater, in terms of pounds of SO₂ emitted for each 15 minute period.

e) The procedures and protocols used for the initial performance test will be established by Permittee in the form of a Certification Test Plan Protocol letter that will be submitted to the Administrator and the Director for approval prior to initiation of the certification process. The Administrator and the Director will be notified in writing at least 30 days prior to the testing and will be provided the opportunity to participate in the testing.

iii) SO₂ Monitor Periodic Calibration

a) Daily Calibration. Permittee shall check the SO₂ monitor calibration drift ("CD") as follows:

i. Calibration of SO₂ monitors shall be conducted daily for the determination of instrument zero and span CD on all instrument ranges.

ii. For instruments utilizing calibration gas, the calibration gas must be introduced as close to the sampling point as possible.

iii. The CEMS must be adjusted whenever the zero or span CD exceeds the performance standards.

iv. The zero drift check must be conducted at a measurement level at or between 0% and 20% of the instrument range. The value selected must

be lower than the lowest value that would be expected under normal source operating conditions.

- v. The span drift check must be conducted at a measurement level at or between 50% and 70% of the instrument range unless an alternative concentration can demonstrate better representation of normal source operating levels.
 - vi. If either the zero (or low-level) or high-level CD result exceeds 5.0% of the span value for five, consecutive, daily periods, the CEMS is out-of-control. If either the zero (or low-level) or high-level CD result exceeds 10% of the span value during any CD check, the CEMS is out-of-control. The beginning of the out-of-control period is the time corresponding to the completion of the fifth, consecutive, daily CD check with a CD in excess of two times the allowable limit, or the time corresponding to the completion of the daily CD check that results in a CD in excess of four times the allowable limit. The end of the out-of-control period is the time corresponding to the completion of the CD check following corrective action that results in the CD's at both the zero and high-level measurement points being within the corresponding allowable CD limit.
- b) Quarterly Auditing. Permittee shall comply with the following procedures for quarterly calibration error checks of the SO₂ monitors:
- i. A Cylinder Gas Audit ("CGA") or Relative Accuracy Audit ("RAA") will be performed once per calendar quarter except the calendar quarter in which an annual RATA is conducted. A CGA or RAA will be conducted in three consecutive calendar quarters. The fourth calendar quarter audit will consist of a RATA;
 - ii. A CGA may be conducted in three of four calendar quarters, but no more than three quarters in succession.
 - iii. A CGA will be conducted by challenging the CEMS with an audit gas of known concentration at two points within the following ranges:
 - a. The CGA high-level measurement values must be between 50% and 60% of the

instrument span;

b. The CGA low-level measurement range must be between 20% and 30% of the instrument range.

iv. If the RA determined by the CGA exceeds + 15% of the average audit value or + 5 ppm, whichever is greater, the CEMS is out-of-control.

v. The RAA will be conducted in the same manner as the RATA, described above, except that only three sets of RM test runs will be performed.

vi. If the RA determined by the RAA exceeds + 15% of the three-run average or + 7.5% of the applicable standard, whichever is greater, the CEMS is out-of-control.

vii. The beginning of the out-of-control period is the time corresponding to the completion of the sampling for the CGA or RAA. The end of the out-of-control period is the time corresponding to the completion of the sampling for the subsequent successful audit.

iv) Data Acquisition

a) Data Validation Criteria

Permittee shall retain all measurements related to the CEMS for five years. However, emission data obtained during periods when the CEMS is out-of-control will not be used in the calculation of reported emissions for that period nor be used to determine the total data availability of the reporting period.

b) Permittee shall conduct a RATA each calendar year. Data for the following calendar year will be considered invalid until a successful RATA is initiated.

v) Preventive Maintenance

a) To ensure the collection of quality data and reduce instrument downtime, Permittee shall take corrective action in the following circumstances:

i. Instrument "out-of-control" as determined by the daily zero and span CD checks; and

ii. Instrument malfunction as determined during review of daily zero and span CD check

information.

- b) If an instrument problem is detected as described above, Permittee shall initiate corrective action immediately. If plant personnel observe an analyzer malfunction, a work order will be initiated. Permittee shall be responsible for correcting the malfunctioning instrument. In the event that the repair cannot be accomplished by Permittee's personnel, the manufacturer or other qualified firm will be contracted as required to provide on-site or remote remedial repair services, whichever is deemed necessary.
- c) When the corrective action has been completed, and the analyzer is deemed to be operating properly, appropriate test procedures that document the system's proper operation will be implemented and fully documented. This will be accomplished by repeating the procedure or CD check that was conducted when the malfunction or "out-of-control" condition was initially detected. If the post-maintenance zero or CD checks demonstrate drift in excess of twice the applicable performance specifications, the instrument will be re-calibrated in accordance with the quarterly calibration error check procedures detailed above. Calibrations may be conducted in-situ.

vi) Gas Cylinder Certification

The calibration gas standards used for daily calibration, CGAs, RAAs, and RATAs will be prepared and traceable to EPA Protocol specifications. The calibration gas standards used for all audits (CGA, RAA, and RATA) will not be used for daily zero and span CD checks.

ab. Normal Operation Wet Scrubber Monitoring

The pH of each scrubber underflow shall be measured four times per operating day. If the pH of the scrubber underflow is below 3.5 standard units (s.u.), the operator/Permittee shall conduct a confirming pH measurement within three minutes. If that measurement is below pH 3.5 s.u., Permittee shall discontinue molybdenum sulfide feed to the affected roaster and emissions from the affected roaster will be vented to the unaffected roaster off-gas system as soon as possible. If roaster off-gas system maintenance is necessary, the Scrubber/Equipment Maintenance Operating Procedures described below will be initiated. Otherwise, within 30 minutes after repairs are completed and normal operations begins, the operator/Permittee shall verify make a thorough inspection of all equipment in the roaster off-gas system, consisting of the roaster and each piece of subsequent control equipment, to confirm equipment settings. This shall include verification that all gates are seated, the scrubber slurry pumps are in operation and the scrubber pH level is greater than 3.5 s.u. and record. The results of the inspection and the pH measurement(s) shall be recorded.

~~b. Scrubber/Equipment Maintenance Operating Procedures~~

- ~~(1) When planned maintenance activities require the implementation of the Scrubber/Equipment Maintenance Operating Procedures, Permittee shall record the time when feed to the affected roaster is discontinued and the time when feed is resumed.~~
- ~~(2) Within 30 minutes of switching from Scrubber/Equipment Maintenance Operating Procedures to Normal Operation, the operator shall make a thorough inspection of all equipment in the roaster offgas system, consisting of the roaster and each piece of subsequent control equipment, to confirm equipment settings. This shall include verification that all gates are seated, the scrubber slurry pumps are in operation and the scrubber pH level is greater than 3.5 s.u.. The results of the inspection shall be recorded.~~

~~c. Permittee shall sample and analyze the molybdenum sulfide concentrate feed sulfur content daily. Permittee shall record and maintain daily logs of the sulfur contained in the feed and the feed rate to each roaster.~~

~~d. Permittee shall maintain a log of roaster operations and the operation of each component of roaster offgas system.~~

c. Recordkeeping

Permittee shall record and maintain all of the following information:

- (1) A log of roaster operations and the operation of each component of roaster off-gas system, including the hours of the day that the roasters and their associated air pollution control equipment were in operation; the occurrence and duration of any startup, shutdown, or malfunction in roaster operations; and the occurrence and duration of any malfunction of the roaster operations air pollution control equipment.
- (2) The pH of each scrubber underflow and the results of the inspections required by Section V.B.4.b above.
- (3) The date, time, and duration of when feed to a roaster is discontinued and when feed is resumed.
- (4) All records related to the SO₂ Generation Determinations, including the following:
- (a) All sampling and analysis records for each 24-Hour Composite Sampling Period, which shall include all the information required by Attachment A, Section XIII.A.1-6.
- (b) All data/inputs and results/outputs of the equation in Section V.B.4.a.(1) above, including feed sulfur content, feed moisture content, corrections of wet feed value to dry feed value, feed rate, and all information necessary for conversion of data to pounds SO₂ generated per hour, as required by Section V.B.4.a above.
- (c) All records related to the roaster feed weigh bin load cells, including

daily inspection logs, data and results of all calibrations, and any corrective action taken.

(d) For each period when no valid samples or data exist for a 24-Hour Composite Sampling Period or when the feed weigh bin load cell system is unable to obtain valid measurements of feed to the molybdenum roaster(s) (regardless of whether valid measurements of feed data has been obtained by manually calibrating the feed screw speed), the date, time, and duration of any such periods; the reasons why no valid samples, data, or measurements are available for such periods; any corrective action taken; and whether the missing data procedures of Section V.B.4.a.(1).(a).i.a), V.B.4.a.(1).(a).iii.b), or V.B.4.a.(2) were implemented.

(5) All records related to the SO₂ Mass Emissions Determinations or the operations of the CEMS, including the following:

(a) The date, time, and duration of any periods during which the CEMS is inoperative, and all records of the pH of the scrubber slurry underflow during such periods.

(b) All measurements from the CEMS, including concentration of SO₂, volumetric flow rate, and stack temperature.

(c) All valid CEMS data, reasons and time periods for invalid CEMS data, and whether the missing data procedures of Section V.B.4.a.(1).(b).ii) above was used.

(d) Data and results for CEMS tests, audits, and calibrations, and copies of CEMS testing protocol and performance testing reports.

(e) Records of CEMS repairs, adjustments, or maintenance, and any corrective action taken with regard to the CEMS.

(f) All information necessary for conversion of data to pounds of SO₂ mass emissions per hour, as required by Section V.B.4.a above.

(6) All records related to the comparison of the SO₂ Generation Determinations with the corresponding SO₂ Mass Emissions Determinations referred to in Section V.B.4.a.(1) above; and copies of each CEMS Excess Emissions and Monitoring System Performance Report and of each Summary Report required by Section V.B.4.d below.

d. Semiannual Reporting

(1) Permittee shall submit a CEMS Excess Emissions and Monitoring System Performance Report to the Director and the Administrator semiannually. The semiannual reporting period and submittal deadlines shall coincide with the Compliance Certification requirements of Attachment A, Section VII.A.

(2) The CEMS Excess Emissions and Monitoring System Performance Report shall include all of the following:

- (a) The magnitude of excess emissions computed in accordance with Section V.B.4.a.(1), the date and time of commencement and completion of each time period of excess emissions, and the process operating time during the reporting period.
 - (b) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the roaster operations, including the nature and cause of any malfunction (if known), the corrective action taken, or the preventative measures adopted.
 - (c) The date and time identifying each period during which the CEMS, including the CEMS data acquisition and handling system, was inoperative, except for zero and span checks; the nature of any CEMS repairs or adjustments; and the pH of the scrubber slurry underflow during such periods.
- (3) If (i) the total duration of excess emissions for the reporting period is less than one percent of the total operating time for the reporting period, (ii) the total SO₂ Generation Determination downtime for the reporting period is less than five percent of the total operating time for the reporting period, and (iii) the total CEMS downtime for the reporting period is less than five percent of the total operating time for the reporting period, then only a summary report shall be submitted, unless either the Director or the Administrator requests an excess emissions report. If (i) the total duration of excess emissions for the reporting period is one percent or greater of the total operating time for the reporting period, (ii) the total SO₂ Generation Determination downtime for the reporting period is five percent or greater of the total operating time for the reporting period, or (iii) the total CEMS downtime for the reporting period is five percent or greater of the total operating time for the reporting period, then the summary report and the excess emissions report described above shall both be submitted. For the purpose of this Section V.B.4.d.(3) only, "SO₂ Generation Determination downtime" means each two-hour period when there was a failure to collect or retain a valid feed sample; each 24-hour period when the composite sample was invalid or lost, or when there was a failure to determine the percent sulfur in feed or moisture content in feed; and each one-hour period when there was a failure to collect or retain valid feed weigh bin data, correct the wet feed value to a dry feed value, or determine the SO₂ generated. The summary report shall include all of the following:
- (a) The date and time identifying each period during which (i) less than 12 samples were used for a 24-hour composite sample and the reason(s) for failure to obtain all 12 samples; (ii) the roaster feed weigh bin load cell system was inoperative and the nature of system repairs or adjustments; and (iii) the missing data procedures of Section V.B.4.a.(1).(a).i.a), V.B.4.a.(1).(a).iii.b), V.B.4.a.(1).(b).ii), or V.B.4.a.(2) above were used and the reason(s) for such use.
 - (b) When no excess emissions have occurred; when the CEMS or the feed weigh bin load cells, as well as the associated data acquisition and handling systems, have not been inoperative, repaired, or adjusted; or when the missing data procedures of Section V.B.4.a.(1).(a).i.a), V.B.4.a.(1).(a).iii.b), V.B.4.a.(1).(b).ii), or V.B.4.a.(2) above have not been used, such information shall be stated in the report.

(c) All information needed to complete the following summary report form:**SUMMARY REPORT OF EXCESS EMISSION AND MONITORING SYSTEM PERFORMANCE
FOR PHELPS DODGE SIERRITA, INC.**Pollutant: SO₂

Reporting Period Dates: From _____ to _____

Company: Phelps Dodge Sierrita, Inc.

Emission Limitation: No discharge into the atmosphere from any roaster (the operating temperature of which exceeds 700 degrees F.) reduced sulfur in excess of ten percent of the sulfur entering the process as feed

Address: 6200 West Duval Mine Road, Green Valley, AZ 85622

Monitor Manufacturer and Model No.:

Date of Latest CEMS Certification or Audit:

Process Unit Description:

Total Source Operating Time in Reporting Period (in hours):

Emission Data Summary

1. Duration of excess emissions in reporting period due to:
 - a. Startup/shutdown: _____
 - b. Control equipment problems: _____
 - c. Process problems: _____
 - d. Other known causes: _____
 - e. Unknown causes: _____
2. Total duration of excess emissions: _____
3. Total duration of excess emissions x (100)[total source operating time]: _____ %

SO₂ Generation Determination Performance Summary

1. SO₂ Generation Determination downtime in reporting period due to:
 - a. Failure to collect/retain valid two-hour feed sample: _____
 - b. Failure to collect/retain valid 24-hour composite sample: _____
 - c. Failure to determine 24-hour percent sulfur in feed: _____
 - d. Failure to determine 24-hour moisture content in feed: _____
 - e. Failure to collect/retain valid one-hour feed weigh bin data: _____
 - f. Failure to correct one-hour wet feed value to dry feed value: _____
 - g. Failure to determine one-hour SO₂ generated: _____
2. Total Generation Determination downtime (periods in which more than one of the above circumstances apply are to be counted only once): _____
3. Total Generation Determination downtime x (100)[total source operating time]: _____ %

CEMS Performance Summary

1. CEMS downtime in reporting period due to:
 - a. Monitor equipment malfunctions: _____
 - b. Non-monitor equipment malfunctions: _____
 - c. Quality assurance calibrations: _____
 - d. Other known causes: _____
 - e. Unknown causes: _____
2. Total CEMS downtime: _____
3. Total CEMS downtime x (100)[total source operating time]: _____ %

On a separate page, describe any changes since last report in CEMS, process, or controls.

I certify that the information contained in this report is true, accurate, and complete

Name: _____
 Signature: _____
 Title: _____
 Date: _____

C. Performance Testing Requirements

[A.A.C. R18-2-306.A.3.c and -312]

1. ~~Molybdenum Roaster - Main Stack~~

a.

- b. Permittee shall conduct annual performance test(s) for sulfur emissions from the molybdenum roaster(s). A sample of the inlet molybdenum sulfide feed shall be obtained~~sampled~~ during the performance test. The sample of the inlet molybdenum sulfide feed shall be analyzed for sulfur content. The roaster performance tests shall be conducted in accordance with Reference Method 6 in 40 CFR 60, Appendix A. Alternatively, the satisfactory completion of annual RATA testing, as specified in Section V.B.4.a.(3).(c) above may be used to satisfy this requirement. The pH of the scrubber slurry underflow shall be recorded during the performance test and reported as part of the test results.

[State Enforceable Only]

2. ~~Molybdenum Roaster - Maintenance Stack~~ [State Enforceable Only]

- a. ~~Permittee shall conduct roaster profile tests and Feed Termination Delay tests, as described below, if the roaster off-gases have been vented to the maintenance stack at any time in the current or preceding calendar year.~~

- b. ~~Permittee shall conduct a semi-annual roaster profile test to determine the feed termination delay time required for 90 percent of the sulfur in the feed to be removed, if the off-gases from the idled roaster are vented to the maintenance stack. The following procedures shall be used in conducting the roaster profile test:~~

(1) ~~Under normal operating conditions, maintain the roaster feed at a constant rate.~~

(2) ~~Obtain samples of the roaster feed and the discharge of each hearth in the roaster, and analyze each sample for sulfur content.~~

(3) ~~Calculate the time required to capture 90 percent of the sulfur in the feed.~~

(4) ~~The new data generated through the semi-annual roaster profile shall be added to the existing database to determine the Feed Termination Delay time using statistical analysis, specifically a 't' distribution test with a 99 percent confidence level.~~

- c. ~~The results of the semi-annual roaster profile test shall be verified using the Feed Termination Delay test. This test shall be conducted annually, and as follows:~~

(1) ~~Under normal operating conditions, the roaster off-gas shall be sampled for sulfur concentration. The roaster off-gas shall be sampled and analyzed in accordance with EPA Reference Methods 6 or 6C and 8.~~

- ~~(2) All samples shall be taken from a sampling point prior to the lime slurry scrubber.~~
- ~~(3) A sample of the roaster feed shall be taken concurrently with the termination of the roaster feed, and analyzed for sulfur content.~~
- ~~(4) The sampling period shall begin after the roaster feed is terminated.~~
- ~~(5) The sampling period shall end when the concentration of sulfur at the sampling point is less than ten percent of the initial concentration.~~
- ~~(6) The off-gas sulfur concentration shall be compared to the sulfur content in the feed to verify the sulfur profile test results.~~

23.

34.

a.

(1)

(2)

(3)

(4) Method 3 or 3A for gas analysis and calculation of excess air, using the integrated sample technique;

(5) Method 6 or 6C for concentration of SO₂.

b.

c. For Method 6, the sampling site shall be the same as that selected for Method 5. ~~The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m (3.28 ft). For Method 6, the sample shall be extracted at a rate proportional to the gas velocity at the sampling point.~~

d.

D. Air Pollution Control Requirements [A.A.C. R18-2-306.A.2, A.A.C. R18-2-721.E, and R18-2-331]

[note: double-underlining in the Existing Title V Permit has not been reproduced here]

1. At all times, including periods of startup, shutdown, and malfunction, Permittee shall maintain and operate the molybdenum plant and the associated wet scrubbers, the cyclones, the mist eliminators and the electrostatic precipitators associated with the molybdenum plant in a manner consistent with good air pollution control practices for to minimizeing particulate matter emissions and, where applicable, reduced sulfur emissions.
2. ~~Permittee shall discontinue molybdenum sulfide feed to the affected roaster for the feed~~

~~termination delay time prior to scrubber/equipment maintenance, if off-gases are to be vented to the maintenance stack.~~ [State Enforceable Only]

3. ~~Off-gases from the idled roaster shall be vented to:~~
 - a. ~~the operating roaster train, or~~
 - b. ~~the maintenance stack only after the feed termination delay time has elapsed.~~ [State Enforceable Only]
4. ~~The feed termination delay time shall be determined through the semi-annual roaster profile and verified through the annual Feed Termination Delay Test, and shall be posted in the molybdenum roaster control room. The feed termination delay time is defined as the amount of time for 90 percent of the reduced sulfur in the roaster feed to be removed.~~ [State Enforceable Only]
62. At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, maintain and operate all other the molybdenum plant pollution control devices including and the associated baghouses, spray bars, duct work and hoods in a manner consistent with good air pollution control practices for minimizing particulate matter emissions. [A.A.C. R18-2-306.A.2 & R18-2-331]

3. Molybdenum Roasting

- 5a. Roof mode operation is prohibited. Roof mode means to vent roaster off-gas directly to the atmosphere through stacks in the roof of each roaster. [State Enforceable Only]
- b. Bypassing molybdenum roasting pollution control devices (i.e., diverting molybdenum roaster off-gas such that the off-gas fails to pass through a cyclone, an electrostatic precipitator, a wet scrubber, and a mist eliminator) on a roaster is prohibited until that roaster has ceased operating (for the purpose of this Section V.D.3.b only, a roaster has "ceased operating" when at least 24 consecutive hours have elapsed since any feed has entered that roaster). Permittee shall not use the molybdenum roaster maintenance stack to vent roaster off-gas to the atmosphere. Any ducting to the molybdenum roaster maintenance stack shall be disconnected, thereby eliminating the possibility of routing roaster off-gas to the atmosphere through the maintenance stack.

E. Permit Shield

1. ~~Except as provided in Section V.E.2 below, c~~Compliance with conditions of Section V shall be deemed compliance with Arizona SIP Rule R9-3-521(A)(2)(a) and (b), A.A.C. R18-2-702(B) and (c), and A.A.C. R18-2-721(E), (F) and (H), for the equipment subject to Section V. [A.A.C. R18-2-325]
2. ~~With regard to Source ID 041 (Unleached Molybdenum Sulfide Dryers) and Source IDs 056, 058, 118, and 119 (Molybdenum Roasting), there are unresolved applicability issues, which are the subject of Findings and Notices of Violation, Docket Nos. R9-98-1, R9-00-25, and R9-01-17. The permit at this time neither addresses nor shields the Permittee from enforcement actions related to the applicability of State SIP R9-3-301, R9-3-304, R9-3-305, and R9-3-306 to Source ID 041. The permit at this time neither addresses nor shields the Permittee from enforcement actions related to the applicability of State SIP R9-3-306 and R9-3-521 as to Source IDs 056, 058, 118, and 119. The permit in no way implies that a determination has been made as to the applicability of State SIP R9-3-521 to Source ID 041, or that Source ID 041 is an "existing source" as that term is defined in State SIP R9-3-101.~~

The following entries in the Equipment List table of Attachment C of the Existing Title V Permit are amended as follows:

ID	EQUIPMENT NAME	YEAR	NSPS
	<i>Four (4) Secondary Crushers</i>	<i>ND*<u>1991</u></i>	<i>ND*<u>Y</u></i>
	<i>Four (4) Secondary Discharge Screens</i>	<i>ND*<u>1993</u></i>	<i>ND*<u>Y</u></i>
	<i>Nine (9) Tertiary Crushers</i>	<i>ND*<u>1985</u></i>	<i>ND*<u>Y</u></i>
	<i>7A Conveyor</i>	<i>ND*<u>1987</u></i>	<i>ND*<u>Y</u></i>
002	<i>#1 Wet Scrubber - Sierrita Secondary Crushing Building</i>	<i>ND*</i>	<i>ND*<u>Y</u></i>
003	<i>#2 Wet Scrubber - Sierrita Secondary Crushing Building</i>	<i>ND*</i>	<i>ND*<u>Y</u></i>
004	<i>#3 Wet Scrubber - Sierrita Secondary Crushing Building</i>	<i>ND*</i>	<i>ND*<u>Y</u></i>
005	<i>#4 Wet Scrubber - Sierrita Secondary Crushing Building</i>	<i>ND*</i>	<i>ND*<u>Y</u></i>
006	<i>#5 Wet Scrubber - Sierrita Secondary Crushing Building</i>	<i>ND*</i>	<i>ND*<u>Y</u></i>
007	<i>#7 Wet Scrubber - Sierrita Secondary Crushing Building</i>	<i>ND*</i>	<i>ND*<u>Y</u></i>
041	<i>Three (3) Dryers <u>[add appropriate rated capacity]</u></i>	<i>ND*<u>[add date]</u></i>	<i>N/A</i>
	<i>Molybdenum Roasting - Maintenance Stack</i>		
	<i>Two (2) #1 and #2 Molybdenum Roaster</i>	<i>1968</i>	<i>N/A</i>
	<i>Two (2) Cyclones</i>	<i>1968</i>	<i>N/A</i>
	<i>Two (2) Electrostatic Precipitators</i>	<i>1968</i>	<i>N/A</i>
056	<i>Maintenance Stack</i>		<i>N/A</i>
	<i>Molybdenum Roasting - Main Stack</i>		

The following endnote to the Equipment List table of Attachment C of the Existing Title V Permit is amended as follows:

~~ND*—These pieces of equipment are subject to ongoing negotiations pursuant to Findings and Notices of Violation Docket Numbers, R-9-98-1 (Oct. 1, 1997), R9-00-25 (Sept. 6, 2000), and R9-01-17 (Aug. 13, 2001).~~